

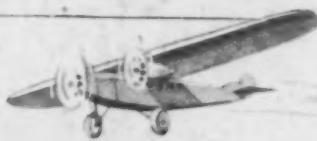
Railway Age

AND RAILWAY REVIEW

SECOND HALF OF 1928—NO. 15

OCTOBER 13, 1928

SEVENTY-THIRD YEAR



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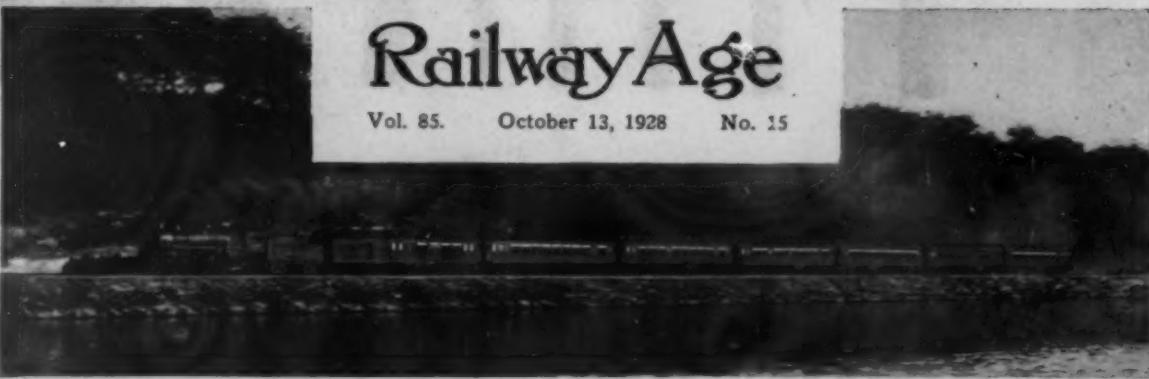


A section of the framing yard at the Beaumont Plant.

International Creosoted Yellow Pine Poles

Railway Age

Vol. 85. October 13, 1928 No. 15



"The Twentieth Century Limited" along the Hudson River

Contents

Moving Strawberries on Time Page 698

An article telling how the St. Louis-San Francisco handles this highly perishable movement without delays.

Frisco Opens Route Into Pensacola 701

A description of the new 151-mile link in Alabama and Mississippi which completes the direct line from St. Louis and Kansas City to the Gulf Coast.

Lehigh Valley Consolidates Inter-Shop Transport 707

Tells how all movements of materials not requiring rail haul have been consolidated into a single unified system of inter-shop transport and delivery.

EDITORIALS

Successful Long Engine Runs	693
The Maximum Capacity of a Single Track	693
Plan to Attend the Motor Transport Meeting	693
Advocacy of Railroad Operation of Motor Vehicles Grows	693
A Little Encouragement Counts	694
A. E. R. A. Renews Demand for Motor Coach Regulation	694
Railway Results Improving	694
Grade Marked Lumber and the Railroads	695
A Question Worth Considering Now	695
Fixing the Lengths of Sections	696
Railroads and Politics	696
A Supply Problem Unsolved	697

GENERAL ARTICLES

Moving Strawberries on Time	698
Frisco Opens Route into Pensacola	701
Block Signal Mileage, 1928	706
Lehigh Valley Consolidates Inter-Shop Transport	707

GENERAL ARTICLES—Continued

Van Sweringens Purchase 67 Per Cent of B. R. & P. Stock	710
Burlington Tests Multiple Unit Gas-Electric Cars	710
Northern Merger Case Submitted	711
Claim Prevention and Freight Car Repairs, By Joe Marshall	713
Refrigerator Cars for the Fruit Growers Express Company	715
National Safety Congress Meets at New York City	717
A Railway Employment Stability Study	719
Why Empty Car Mileage Has Increased, By M. J. Gormley	721
Double-Header Rule Becomes Issue in Wage Case	723
Freight Car Loading	725

COMMUNICATIONS AND BOOKS	725
LOOKING BACKWARD	727
ODDS AND ENDS OF RAILROADING	728
NEWS OF THE WEEK	729

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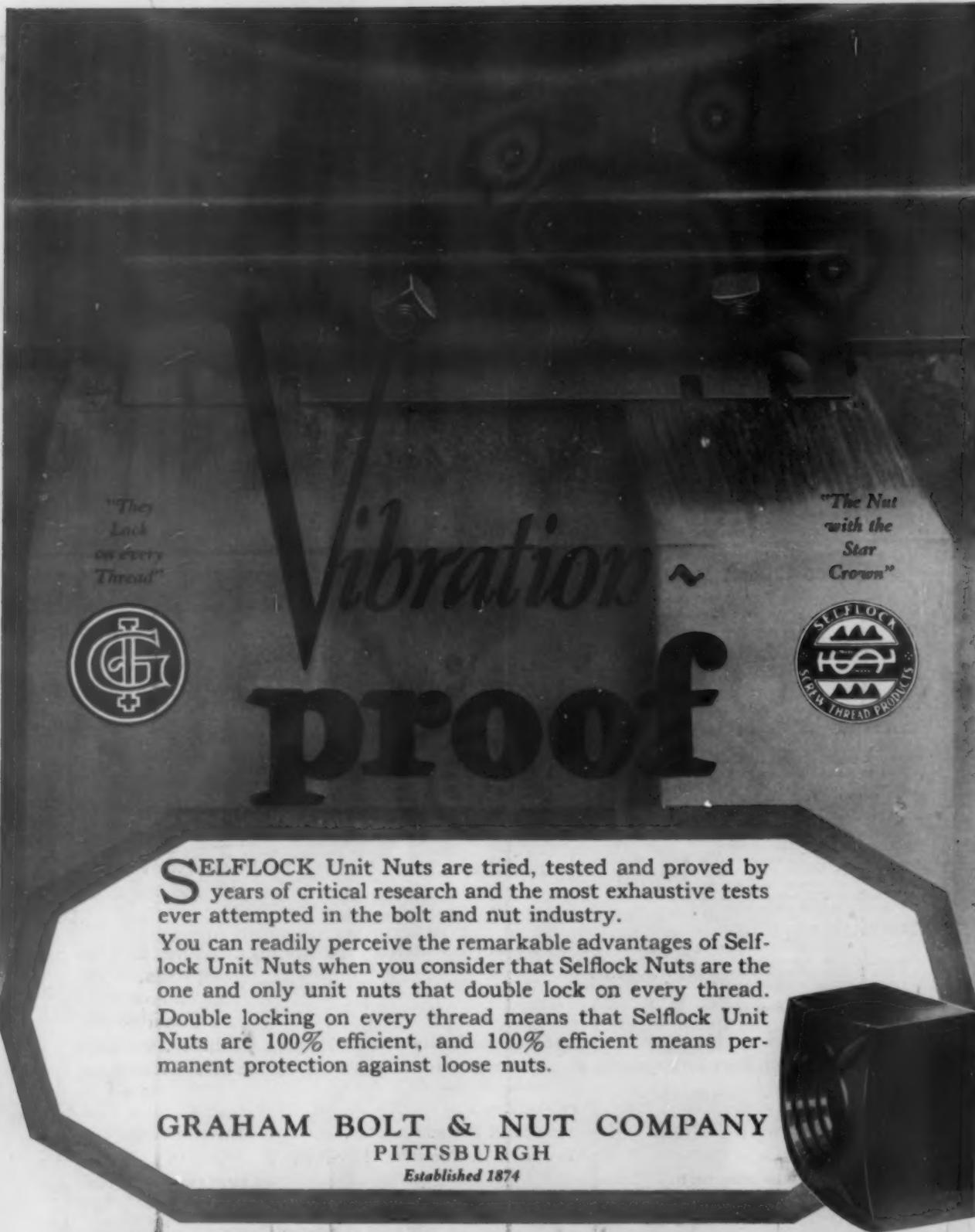
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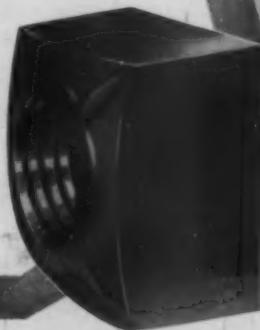
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Railway Age

Vol. 85, No. 15

October 13, 1928

Table of Contents Appears on
Page 5 of Advertising Section

Successful Long Engine Runs

THE Missouri Pacific has closed five locomotive terminals by extending engine runs in passenger and freight service and the Northern Pacific four. The Union Pacific and numerous other roads have effected similar savings by this practice. In every case where long engine runs have been tried, the education of firemen in the proper methods of firing becomes extremely important. It is advisable, of course, to sell the idea also to the engineman, particularly where the locomotives have been assigned, rather than pooled. The fireman, however, can make or break the plan. For years, it has been his custom to allow the fire to die down as he approaches the terminal, since it was to be "knocked" upon arrival. Under the extended engine run plan, however, this is not done, and it is sometimes difficult to bring about a change in the habits of the fireman. When long engine runs are established, particular pains should be taken by supervisory officers to see that firemen are educated to the point where they will leave the fire in at least as good condition as they find it. This is particularly necessary where the fuel used is not of the best, but in every case, such education contributes materially to the success of the extended engine run plan.

The Maximum Capacity of a Single-Track Line

IF passing track facilities and methods of directing train movements can be so arranged as to keep all trains moving on a busy single-track line, that line is doing all that a double-track line could do for that particular traffic. By locating passing sidings on a time basis, trains may be so operated as to make close meets and thereby reduce delays, provided a system for directing the movements is used that is flexible; this cannot be said of the train order and time table method unless an excessive number of block offices and operators are used. The modern solution for this problem is the centralized control signal system, which not only includes the control of signals directing train movements without written orders, but also controls the operation of the passing track switches so that a train can enter or leave a siding without stopping or slowing down for the switch. The next step is to eliminate the train stop while on the siding. The Pere Marquette, when installing the centralized control between Flint, Mich., and Saginaw, as explained in the *Railway Age* for October 6, installed two passing tracks 7,900 ft. long and one 8,700 ft. long. When watching the operation of this line, one cannot fail to note the large number of non-stop meets that are made. In some cases trains run through the 20-mile territory without stopping, although they may meet as many as two and three trains on the way. The use of the centralized control system with passing tracks of liberal length at the proper location would, therefore, seem to provide the maximum capacity for a single-track line that may be obtained efficiently.

Plan to Attend the Motor Transport Meeting

THE first annual meeting of the Motor Transport Division, American Railway Association, will be held at Detroit, Mich., on October 24-26 inclusive. It is urged that as many railway officers as possible plan to attend this meeting. Surely no problem more vital to the welfare of the railways exists than that of meeting highway competition for traffic. The fact that a great amount of passenger traffic has already been lost and that increasing amounts of freight traffic are being handled on the highways rather than on the railways is well known. The purpose of the Motor Transport Division is to suggest means of co-ordinating highway service with railway service in order to serve the public better and to protect the interests of the railways. Officers in the operating, traffic and other departments of the railways are directly concerned on their own lines with matters similar to those which are receiving the attention of the Motor Transport Division. They can benefit from hearing at the meetings of the division, the experiences of the other roads and in turn can themselves be helpful by participating in the discussions. The attendance at previous meetings of the Motor Transport Division has not been particularly small, but it has by no means been as large as the value of the work of the division to a great number of railway officers would justify. As many as possible should plan to attend the Detroit meeting. The nature of the program of the meeting insures that the time will be well spent.

Advocacy of Railroad Operation of Motor Vehicles Grows

THE opinion of railroad men in intimate contact with that service with which highway competition is most keenly felt, to wit, passenger service, seems to be crystallizing on a policy for meeting this competition. While some few railroads have almost from the outset taken the stand that competition of highway vehicles can be effectively met only by the railroads themselves operating such vehicles, many have in the past apparently believed that improved railroad service and sales effort would meet the situation. That supporters of the latter viewpoint are less numerous, while adherents to the former opinion are becoming more numerous and more assertive was plainly evidenced at the recent meeting of the American Association of Passenger Traffic Officers at Colorado Springs. Possibly there were some in attendance who believe that the railroads should "stick to the rails," but, if so, they did not actively advance this view during the discussion. On the other hand, many speakers—among them officers of several of the most important railroads in the country—ardently advocated the operation of highway motor coaches by railroad subsidiaries, co-ordinating the schedules of these lines with railroad service. Some speakers

expressed the opinion that, in some localities, highway subsidiaries owned by railroads jointly, rather than individually, might better solve the problem. Before the coming of the motor vehicle the railroads met all the public's needs for common carrier service except that of transportation from street corner to street corner. Is there any reason why they should not, by utilizing the motor vehicle, reassert their pre-eminence in all phases of common carrier service outside the strictly *Intraurban* field? We know of no reason why they should not—provided always that the prospective earnings from such new service, or the savings which such service can effect in railroad operation, are of sufficient importance to the financial well-being of the railroads to justify the effort.

A Little Encouragement Counts

THREE are few railway officers who do not see many elements of advantage to the railways and their employees in the numerous railway clubs and other similar organizations throughout the country. Many railway officers are active members of these organizations and have countenanced with pleasure the formation of clubs among their own employees. There is ample evidence as to the value of these organizations to the railways, both in building up an *esprit de corps* in the case of the local clubs, and in the broadening and training of supervisory officers through the highly practical discussions at certain of the larger sectional clubs and national associations. If these organizations are for the good of all concerned, higher railway officers can well afford to encourage them from time to time, and, where possible, show an active interest. This thought was expressed recently by an executive officer of an eastern road, who was carrying out his expressed belief by dropping in at a meeting of one of the sectional maintenance-of-way clubs. "It is good for all concerned that you men meet in this way," he said, "and my road should be well represented at every one of your meetings. This is not only my thought, but that of the president of my road who has always expressed high regard for the work being done by your organization." Just a simple statement, but highly encouraging to the organization, and, more particularly, to those members representing the same road as the speaker. Such interest is stimulating to any organization, and particularly at this time of the year when many of them are resuming their activities after the summer season.

A. E. R. A. Renews Demand for Motor Coach Regulation

FEDERAL regulation of motor coaches engaged in interstate commerce, in spite of the consistent lack of success of its proponents in the past, is still not a discarded issue. Executives of the American Electric Railway Association, during the annual convention of that organization at Cleveland, Ohio, last month, announced their intention to continue to press the fight for such regulation. It appears inevitable that the fight will be won sooner or later, but just how soon it will be won is problematical. Perhaps a stronger public sentiment in favor of federal regulation of interstate motor coaches is needed. In the past, when bills calling for such regulation have been up for consideration before congressional committees, those directly involved in motor coach transportation have presented a virtually united front in support of the principle of regulation. The public, however, has apparently taken no stand on the matter, except to the extent that its representa-

tives on the state regulatory commissions have gone along with the operators and manufacturers of motor coaches at the hearings. It is not difficult to understand, therefore, why Congress has failed to become aroused over the situation. Some time ago, when newspapers all over the country were giving prominence to reports of "wild-cat" motor coach operators leaving their passengers stranded before reaching their destinations, it would have been more easy to stir up public sentiment in favor of motor coach regulation. Such abuses have now virtually disappeared, however, as the irresponsible motor coach lines have gone into stronger and more responsible hands. If public sentiment in favor of federal regulation of motor coaches can be aroused, the necessary legislation will be passed in short order. Lacking such sentiment, however, controversy among the operators and manufacturers, who favor such regulation in principle, over the exact phraseology of the proposed bill will probably continue to overshadow the major issue, and passage of a bill will be still further postponed.

Railway Results Improving

THE expectation that the total earnings and net operating income of the railroad industry would be more favorable in the second half of 1928 than in the second half of 1927 is being fulfilled. In both July and August total operating revenues were slightly larger than last year. Operating expenses were less, and net operating income increased almost \$20,000,000 in the two months. It seems probable that there will be a corresponding improvement in the financial results reported during the rest of the year, as during the latter part of 1927 the tendency of freight business was to decline, while throughout the second half of this year its tendency undoubtedly will be to increase.

In the first eight months of 1928 the net operating income of the railways was about \$685,600,000, while in the first eight months of 1927 it was about \$676,800,000. In the first eight months of 1926 it was \$745,500,000. It will be seen that while it was slightly larger this year than last year it was about \$60,000,000 less than in 1926. Even in July and August, when it was larger than in 1927, it was \$26,400,000 less than in 1926. Furthermore, it must be remembered that the railways now have a larger investment upon which to earn a return than ever before. In the first eight months of 1926 the net return earned was at the annual rate of 5.13 per cent; in 1927, 4.52, and in 1928, 4.47. In spite of the recent improvement in results, the return earned in the first eight months of this year was at a lower annual rate than in any year since 1922, excepting 1924. Another point which should not be overlooked is that the recent improvement in financial results has been due mainly to reductions in operating expenses, and that these have been secured largely by reductions in maintenance expenditures.

Consideration of all the facts, makes it clear, however, that the railway situation is beginning to improve. Total earnings recently have been larger than last year in spite of the continuing decline of passenger earnings. Most of the reduction in operating expenses has been due to economies that have not unfavorably affected the condition of the properties. The railways have the capacity for handling a much larger volume of business than is now moving, they are being operated with greater efficiency, and if there should be a substantial increase in their freight business there probably would

be a relatively larger increase in their net operating income. Unless tendencies in the industry become much more favorable than they are now, however, the percentage of return earned in the entire year 1928 will hardly be much larger than last year, will be less than in 1926, and will continue to fall far short of the so-called "fair return."

Grade-Marked Lumber and the Railroads

ACCORDING to an announcement of the National Lumber Manufacturers' Association, grade-marked lumber will be available in every species of wood by January 1, 1929. This practice of indicating the quality of lumber by a stamp designating the grade, the identity of the manufacturer and the trade mark of the sponsoring association, has been initiated by the lumbermen with the endorsement and cooperation of the National Committee on Wood Utilization. It follows as a natural corollary to the formulation and promulgation of the National Lumber Standards. But whether or not grade marking and, with it, National Lumber Standards are to mean anything depends on the extent to which the ultimate consumer takes an interest in this movement. If he demands grade-marked lumber, the mills will be compelled to provide it.

With this thought in mind, a concerted effort has been made to bring this message to the ultimate consumer, who has been pictured in the typical case, as the customer of the local retail lumber yard, and special pains have been taken to show how he will benefit from lumber standardization and grade-marking. In some respects, at least, an officer of a lumber-consuming or using department of a railroad is in much the same position as the ordinary buyer of lumber, the purchasing department functioning as an intermediary between him and the wholesaler exactly as the retail yard does in the case of the typical lumber user.

The using department of a railroad is necessarily in the best position to know what quality of material is best suited to a given purpose and, in the case of lumber, the National Lumber Standards, while perhaps far from perfect, afford the best means whereby the user can convey to the purchasing department a description of what is needed, in a form that is sufficiently general to permit of the freest play of competition in buying. Grade-marking affords the user the best check on whether he is being supplied with what he asks for.

In principle, standardization and grade marking of lumber are but an elaboration and extension of what was done in the development and adoption of the standard specification for crossties of the A. R. A. It is to be expected that objections will be raised to the lumber standards, exactly as opposition was offered to the tie specifications, and it is entirely possible that some features of the lumber standards are not workable as applied to railway requirements, but it will be remembered, that in spite of the opposition which greeted the tie specifications, they are now generally accepted in principle if not, in all cases, in spirit.

It was the users of ties who promoted the adoption of the standard specifications by the railroads. If the users of wood feel that they will benefit by lumber standards and grade marking, they will have to take the initiative in a movement for the purchase of grade-marked lumber by the railroads.

A Question Worth Considering Now

IN July, 1927, the Class I railroads of the United States employed 487,429 men in maintenance of way activities. In February of this year only 329,452 men were so employed. In other words, 157,977 men were laid off during the fall. In July of this year this force had again been built up to 452,731 and it is reasonable to expect that at least 125,000 of these men will be again laid off by mid-winter. Such is the regular fluctuation between summer and winter maintenance of way forces. This, in part, is made necessary by the difficulty of doing certain work during the winter. It is in part, also, the result of long-established habits of management which were formulated when less attention was given to the efficiency with which this work is conducted. As we are now in the season when the wholesale curtailment in forces is gaining momentum, it is not amiss to give it consideration at this time.

The discharge of such an army of men, more or less experienced in the work they are called upon to perform and all of whom will be needed the following summer, should be cause for concern for any employer. If proof is required to convince any one of the advantage of a trained man over an untrained one, he can well afford to study the experiences of those roads which have graduated wage scales in effect for maintenance of way employees, with higher rates for more extended experience. These roads have found a decided advantage in the reduction in labor turnover and the retention in service of the more experienced men. Yet most roads now deliberately throw away this advantage by discharging a third of their employees each fall. If the roads could be assured that all or even a large proportion of these men would return the following spring, this loss would not be so serious, but this is not the case, for it is common experience, particularly in the industrial centers, where labor is in greatest demand, that the more efficient men look elsewhere for employment and are lost permanently to the roads. As a result the railways are training a hundred thousand or more men each year, with all of the attendant losses that this involves.

The annual reduction of maintenance forces to a "winter basis" is, of course, a result of the long-cherished idea that little or no work can be done to advantage in the winter and that economy is therefore promoted by cutting the forces to the minimum consistent with safety. The same idea long prevailed in the construction industry, but recent years have seen such a change that the volume of work now done during the winter compares favorably with that of the summer on other than grading operations. A few railroads have made commensurable progress with respect to their maintenance work, but the roads as a whole have as yet made relatively little change in their practices.

It is not to be expected, of course, that all maintenance work can be prosecuted regardless of season. Grading, for example, is essentially a summer operation. There is much other work, however, which can be done almost as well in the winter as in the summer. Outstanding among these operations is the laying of rail. A number of roads, including those as far north as the Lehigh Valley and the Delaware & Hudson, have laid all of their rail during the winter for years. On these roads it is found that other operations can likewise be performed equally well at this season, thereby providing constructive employment for a large part of the forces needed during the summer and making pos-

sible the retention of a force of experienced men throughout the year.

Another consideration of increasing importance in this connection, but one which has not yet received adequate attention from the roads, is the possibility of securing more nearly constant service from work equipment, the investment in which now reaches a large sum on most roads. Much of this equipment is now idle during the winter, thereby increasing the charge which must be made against the work on which it is actually employed. Consideration of economies are forcing the contractor more and more into winter work. The same consideration should receive attention in maintenance of way work.

Fixing the Lengths of Sections

THE economic length of line to be assigned to the care of section gangs is a question which has been debated since railways began operation and which will probably continue as a subject of debate until—if ever—railways cease to exist, since infinite variety is afforded the arguments by the changing conditions in transportation matters.

In the past, five or six miles of single main track, with the usual amount of passing tracks and siding, was the ordinary length of a section, and this limit was fixed quite as much by the time necessary to get over the section on a hand car as by other considerations. With the advent of the motor car, which could be operated safely at speeds three or four times as great as the "man-killer" it displaced, this limitation was removed and there was a general tendency to lengthen the sections without increasing the size of the gangs proportionately in all cases. Even where the gangs were increased, the resulting tendency toward lessened supervision led to a movement back to the shorter territories.

Of late years, more attention has been paid to the establishment of a yardstick to measure the amount of work to be performed in the maintenance of the track, and much study has been devoted to the proper factors to be used in computing equated mileages so that a section gang with a given number of men will have substantially the same amount of work to look after as another gang with a like number of men on any section of any district. The fixing of exact values for these factors is obviously difficult, if not impossible, but they can be fixed to afford approximate equalities.

Roadmasters and supervisors as a class, have opposed long sections, but now, oddly enough, it is proposed by them through their organization, the Roadmasters' and Maintenance of Way Association, to extend the length of sections on heavy traffic lines, and their arguments are based on sound reasoning. With the introduction of heavier track materials, particularly rails and frogs, it is often impossible to handle these accessories with the men assigned to one section, and this results in delays at times when delays are particularly serious, as for instance, when a broken rail or damaged frog must be replaced to permit main line traffic to proceed.

The proposed plan would obviate such difficulties by doubling both the lengths of the sections and the number of men assigned to these sections, and by assigning an assistant foreman to each gang. In this way, the entire gang could be worked as a unit in many cases, thus doing away with the need of extra gangs, and would be large enough to handle the heavier materials without calling on adjoining sections for help, while for routine work the men could be formed into two gangs, each with proper supervision.

Such a plan is worthy of serious consideration, since it entails no lessening of supervision, and has the further advantage that it provides close and intensive training for future foremen.

Railroads and Politics

THE railroads have been the subject of very little discussion in the present national political campaign, but they have been mentioned once in a while. The other day, for example, a Republican newspaper, in citing various changes that have occurred within the last eight years, said that under the Democratic Wilson administration "the railroads were all but wrecked by their experience with government control," but that now "the railroads are in excellent condition and are prosperous." The obvious purpose was to claim for the Republican party credit for the contribution to the general prosperity that has been made by the improvement in railroad conditions since 1920.

We are glad to see the railways mentioned occasionally in political discussions in terms indicating that the speaker, or writer, mentioning them does not think that for them to be in good condition is necessarily a menace to the public welfare. While the railroads are one of the country's most important industries, they are, as we have previously remarked, the one important industry regarding whose welfare no political party or candidate has expressed any solicitude in the present campaign. There is much debate as to which of the two great parties can be relied upon to do the most for agriculture. There is much discussion of the tariff, and apprehension expressed as to what might be the effect produced by changes in it upon the manufacturing industry. But no political party or candidate has expressed any concern regarding various measures now actually being advocated for reducing railway earnings or increasing railway expenses, while there is much advocacy of measures such, for example, as for the development of inland waterways—the adoption of which would be inimical to the railways.

Why is it that parties and candidates compete in telling the public what they will do for other industries, but say nothing to inspire hope in the railroad industry? Is it because, as the Republican newspaper quoted said, the railways are "prosperous"? They earned in the first eight months of this year at the annual rate of 4.47 per cent on their property investment, or less than in the corresponding part of any year since 1922, excepting 1924. Would that be regarded as prosperity in any of the other industries concerning whose welfare so much solicitude is expressed?

The newspaper quoted implied not only that the railroads are prosperous, but that they owe their prosperity to a particular party. We think that for any political party to claim it has done anything to make the railroads prosperous would enliven the present political campaign with its best piece of humor.

The present federal policy of effective government regulation of railways was adopted in 1906 by the passage of the Hepburn Act by a Republican congress and its signing by a Republican president. The Mann-Elkins Act, empowering the Interstate Commerce Commission to suspend advances in rates, was likewise a Republican measure. A majority of the members of the Interstate Commerce Commission which in 1911 denied the first application of the railways for a general advance in rates, were Republicans. The La Follette valuation law likewise was adopted by a Republican Congress and signed by a Republican president.

The Democratic record begins in 1913. For seven years previously the percentage of net return earned by the railways had been declining. The Democrats did not stop its decline. In 1914 and 1915 the average earned was the smallest since 1899, and a new high record of railroad bankruptcies was made. In 1916 the Adamson Act was passed by a Democratic Congress and signed by a Democratic president. In 1918 government operation of railroads was adopted by a Democratic administration. Both the directors general who managed the railways under government control were Democrats. The Transportation Act of 1920 was the most constructive piece of railway legislation ever passed but it was passed by a Republican Congress and signed by a Democratic president. It is doubtful if this or any other constructive piece of railway legislation ever would have been adopted by a Congress and president who belonged to the same party. The five years of almost continual car shortages from 1916 to 1920, inclusive, were due to a decline of railroad development which occurred under both Republican and Democratic rule.

It is true that "the railroads were all but wrecked by their experience with government control," which was adopted under a Democratic administration. It is also true, however, that in 1922, under pressure from a Republican administration, the Interstate Commerce Commission, a majority of whose members were Republicans, caused a general reduction of rates, in spite of the fact that the railways were then earning much less than the fair return which they had been assured by the Transportation Act. The Hoch-Smith resolution was passed by a Republican Congress and signed by a Republican president.

Under the rule of which political party have the railways prospered the more? In the eight years of Republican rule ending with 1912 the average return earned by them upon their investment was 5.12 per cent. In the eight years of Democratic rule ending with 1920 the average earned by them including the guarantees resulting from government control was 4.9 per cent. In the seven years of Republican rule since 1920 the average earned by them has been 4.20 per cent.

Regardless of which party has been in power; the general tendency, over periods of years, of the percentage of return earned on the investment in the railroad industry has been downward. There has been a great improvement in railroad service and an increase in the efficiency and economy of operation within recent years; but no political party can justly claim any credit for this. It has been accomplished by the initiative, energy and ability of railway men while the railways have been constantly failing to earn a fair return measured by any standard ever accepted by the Interstate Commerce Commission, by Congress or by the courts and have been constantly subjected to guerrilla attacks by radical politicians belonging to every party, large or small. Both Republican and Democratic members of Congress have attempted to break down the present policy of regulation by commission by voting for the legislation to abolish the passenger surcharge, for the Hoch-Smith resolution and for the Wheeler Senate resolution urging a reduction of the rates of the northwestern railways on farm products. The destructive legislation proposed has been opposed as well as advocated by members of both parties.

The railroad question should be solely an economic one. It is, in fact, a highly political one, because numerous politicians constantly discuss and vote on railway regulation solely to try to get votes. It is, however, the most completely non-partisan of all our great public

questions. There are both Republicans and Democrats in both houses of Congress who favor a fair and constructive policy of railway regulation. There are likewise both Republicans and Democrats in both houses of Congress who favor every measure proposed that will tend to cripple the railways; and unfortunately the latter greatly outnumber the former.

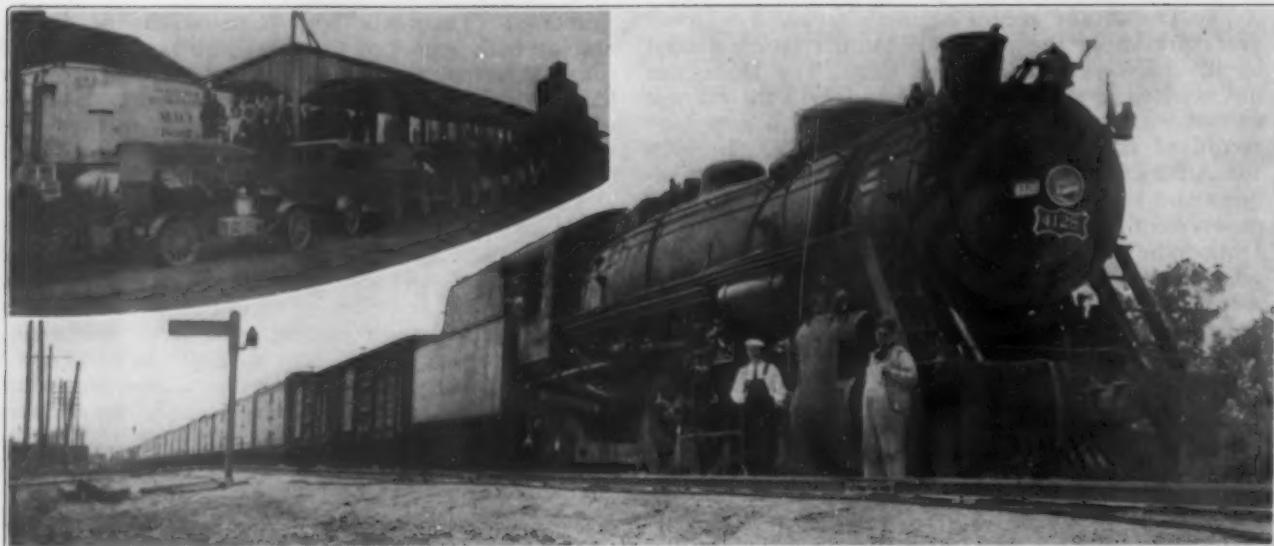
This is a situation which is dangerous to the railroads and the nation. The only remedy for it is to so educate public sentiment that it will cease to be good politics to disregard the rights and interests of the railroads. Can public sentiment be so educated? Past experience affords some evidence that it cannot be and some that it can be. If it is to continue to be good politics for every political party and most important public men to favor unfair and destructive railway regulation, the prospects of the railways will hardly improve.

A Supply Problem Unsolved

SINCE the war the railways have effected a remarkable reduction in the stocks of supplies carried from month to month to meet the requirements of repair forces. The last report of the executive committee of the Purchases and Stores division of the A. R. A. shows a reduction of \$205,000,000 in the value of unapplied materials carried by Class I roads from 1920 to 1926, while the figures for 1928 show still further reductions. This is an accomplishment of no mean proportions and it has released large amounts of capital for more productive purposes, as well as causing economies. It appears, however, that opportunities for further reductions still exist.

The condition in terminals not operated by terminal companies is a case in point. It is customary in such places for each road to repair its own equipment independently of the other roads operating in the same yard, and each road keeps a stock of materials for this purpose. These stocks frequently represent a sizable investment, require the same supervision as other stocks on the railroad, are subject to the same costs of handling, depreciation and obsolescence, and require not only the upkeep of suitable facilities, but the employment of stock keepers and the use of material-handling equipment. Almost invariably a large percentage of the stock carried by each railroad is identical with that carried by the other roads. Brake shoes, journal bearings, brake beams, packing, oils and greases are examples of this. Much of this stock and the expense of handling it could undoubtedly be avoided if a centralization could be effected to eliminate all duplication. It has been suggested that the principal road in the yard carry all the stock, including material special to each road, and simply sell the material to other roads as it is drawn for use. This would not be the burden to the stock-keeping road that it might at first seem.

At the present time there is much exchanging of material between the roads, and the larger road in each terminal usually carries the brunt of this exchanging. Irregularities and clerical confusion can be reduced by centralization, and a much higher turnover obtained. Any additional responsibility which a road assumes for stock at one terminal will be offset by the reverse relationship at other terminals and the total result will reflect a large saving in both the stock carried and the cost of handling it. At any rate, the condition in terminals is a problem that remains unsolved, and it will be interesting to see how the supply officers work it out.



*A Strawberry Train Leaving Monett on the Frisco
Inset: The Berries are Brought to the Loading Stations in a Variety of Vehicles*

Moving Strawberries on Time

How the St. Louis-San Francisco handles highly perishable movement without delays

BETWEEN May 16 and June 16 of this year, the St. Louis-San Francisco handled 2,402 cars of strawberries from southwestern Missouri and northwestern Arkansas. None of these cars missed scheduled connections at Kansas City and St. Louis, nor was there a single complaint registered by shippers as to car supply or service. Although the movement extended over four weeks, much of it was concentrated during the two-week period from May 20 to June 2. On one day, for example, 202 cars were loaded.

In view of the highly perishable nature of the product, a fast schedule is necessary, if development is to be fostered and claims avoided. Accordingly, for the past several years, as the movement has grown, the Frisco has been steadily improving upon its schedules. This year, the berries were handled from the two principal loading points, on the following schedule:

From	To	Miles	Hours	Miles Per Hour
Monett, Mo.	Kansas City	195	10½	18.5
Monett, Mo.	St. Louis	283	14	20.2
Van Buren, Ark.	Kansas City	339	18	18.8
Van Buren, Ark.	St. Louis	411	21½	19.1

Of the 39 trains operated into Kansas City on this schedule, 33 arrived ahead of time, 1 exactly on time and 5 were late. None of these five missed connections, however, as they were only a few minutes behind time. The average arrival time of these 39 trains was 1 hr. 9 min. ahead of the schedule. The 22 trains operated into St. Louis with strawberries, over the busy main line, averaged less than four minutes late arriving there.

One Day's Performance

A summary of the performance on May 29, made by a *Railway Age* representative on the ground, shows an interesting record. Three freight trains, with a total of 100 cars of berries, and two express trains, with 76 cars, were operated from Monett to Kansas

City and St. Louis. The Kansas City movement consisted of one express and two freight trains. The express train left Monett with 30 cars at 7 a. m., and picked up 8 more cars in the Sarcoxie loading field, a few miles north of Monett. This train arrived in Kansas City at 2:20 p. m., having made the 195-mile run, including stops for picking up cars, in 7 hr. 20 min., or at an average speed of 26.5 miles per hour. The first freight train left Monett at 6:20 a. m., with 16 cars of berries, picked up 19 more enroute, and arrived at Kansas City at 2:45 p. m., 8 hr. 25 min. elapsed time, or an average speed of 23.1 miles per hour. The second freight train left Monett at 7:18 a. m., with 32 cars, picked up one car enroute, and arrived at Kansas City at 3:58 p. m., 8 hr. 40 min., elapsed time, or an average speed of 22.4 miles per hour. The icing and delivery performance on these trains will be described later.

One express and one freight train were operated from Monett to St. Louis, being run as one train from Monett to Springfield, Mo., 44 miles, and separated there. The express train left Monett at 8:10 a. m., with 37 cars of berries, picked up another car enroute, and arrived in St. Louis at 6:50 p. m., 10 hr. 40 min. elapsed time, or an average speed of 26.4 miles per hour. The freight train left at 8:10 a. m., with 22 cars, picked up 10 cars enroute, and arrived at St. Louis at 8:35 p. m., 12 hr. 25 min. elapsed time, or an average speed of 22.7 miles per hour. The berries moving by freight were iced and delivered to the Terminal Railroad Association at 10:15 p. m., 1 hr. 40 min. after arrival, for delivery to connections.

The Strawberry Territory

The strawberry sections on the Frisco are principally in the Ozarks of southwestern Missouri and northwestern Arkansas. There is also some production in northeastern Oklahoma and southeastern Kansas, while

this year, for the first time, large quantities of berries were shipped from Tupelo, Miss. The largest shipping points this season were Sarcoxie, Mo., 326 cars, Springdale, Ark., 206 cars and Monett, 194 cars.

While the actual number of carload shipments handled, was 2,402, less than carload lots equivalent to 58 carloads were also handled, making the total 2,460 cars. This is the largest strawberry traffic ever handled by the Frisco, the largest previous production having been 2,017 cars in 1922, while 1,970 cars were handled in 1927. There are 67 loading stations in the Ozark shipping territory, extending from Mansfield, Ark., on the south, to Oswego, Kan., and Sarcoxie, Mo., on the north, and from Tahlequah, Okla., and Vinita on the west, to Springfield, Mo., on the east.

The marketing is handled largely by 38 associations, many of them co-operative. In general, the sales are made at auctions, which attract strawberry buyers from all sections of the country. The growers bring their berries into the loading stations, where they are loaded into cars under the jurisdiction of the marketing associations. These cars are inspected by the buyers, who later bid them in at the auctions. Monett, Mo., is the headquarters of two of the largest marketing associations and the marketing of much of the crop takes place there. Early in the afternoon, the growers begin sending in the berries for inspection and loading and by evening, long lines of every sort of conveyance are formed at the loading stations. The auctions are conducted at night, with 75 to 100 buyers present. Each of the buyers is provided with a mimeographed list of the cars, giving the number and the initials, the loading point and the number of crates loaded in the car, which normally run 448 per express car and 420 per freight car. After the cars have been auctioned off, the buyers give shipping instructions to the association and diversions and reconsignments are arranged for with the railway, as most of the cars are sold rolling. To facilitate this, the railway maintains special forces of clerks and representatives of the superintendent of transportation at the large selling points.

Arrangements Made Before Season Opens

Ten days prior to the opening of the shipping season a conference is held in the office of the superintendent of transportation. This meeting is attended by representatives of the operating, transportation, traffic, agricultural, mechanical and claim departments. The handling of the previous year's crop is gone over in detail, and suggestions for improvement are made. At these conferences careful plans are made for the coming movement. Every phase of the situation is gone into thoroughly and as far as possible, all contingencies are provided for. The field force, consisting of transportation inspectors, claim prevention agents, special representatives and agricultural agents, are given a complete picture of the situation. The estimates of the crop are presented by the agricultural agents in terms of carloads. Normally, these estimates are remarkably accurate, being based on the acreage and probable climatic conditions. Last year, for example, the estimate was within a few cars of the number actually shipped. This year, due to frosts, adverse weather during the picking season and relatively low prices, the estimate was a few hundred cars over the actual shipments.

At this meeting, schedules are prepared from all the loading stations. These schedules are then distributed, in mimeographed form, to all concerned. In addition

to the schedules to St. Louis and Kansas City previously referred to in this article, other special schedules are provided to southern and western points from Monett, such as 20½ hr. to Oklahoma City, Okla., and 21 hr. to Wichita, Kan.

Car Supply

The refrigerator cars for the berries moving via freight are provided under contract with the Merchants' Refrigerator Dispatch, the express cars by the American Railway Express Company. As many of these cars as possible are delivered to the Frisco at St. Louis a few weeks prior to the opening of the shipping season. This year, for example, 1,500 advance cars were received, based on the pre-season estimate. The express company also provided 200 express cars in



The Strawberry Territory Lies in the Foothills of the Ozarks

advance. As soon as these cars arrive on the Frisco, they are given a thorough inspection, including an inspection of the refrigeration apparatus. Any necessary repairs are made and the cars are cleaned and sealed. They are then distributed to the various loading points, arriving there just prior to the opening of the season.

The thorough inspection minimizes the chances of the cars becoming bad order after they are loaded, and few loaded bad order cars are encountered during the season. There was formerly some difficulty as to sliding flat wheels. This was found to be caused by the unfamiliarity of some of the inspectors with the brake mechanism of the refrigerator and express-refrigerator cars, particularly when, as is sometimes necessary, the latter cars were run on freight trains. An intensive campaign of education was started among the inspectors, which had the effect of clearing up the trouble.

Operating Methods

Many of the cars originate on the Central division, extending south from Monett through Fayetteville, Ark., and Van Buren. Most of the early production takes place in this territory. This division has icing plants at Rogers, Ark., Fayetteville and Van Buren, where the cars are iced before being spotted at the loading platforms and re-iced after they are loaded, when necessary. The pick-up schedules on this and other divisions are so arranged as to have the berries in Monett early on the first morning after loading, so that they may be re-iced and consolidated into the so-called "strawberry specials," which leave Monett at

about six a. m. There are three yards at Monett. The east and westbound yards have 12 tracks each, with a capacity of about 1,200 cars each, and the icing station yard has a capacity of 225 cars. In view of the numerous diversions and reconsignments on this class of freight, classification is necessarily somewhat limited, being confined merely to separating east, west and northbound cars. This is done in the icing yard, as the cars are being spotted at the icing platform.

Arrangements for Icing

All ice is supplied under contract with various ice manufacturers, who also attend to the icing of cars, so far as labor is concerned. The supervision is, however, in charge of Frisco employees, specially trained for the purpose.

All cars of berries are concentrated at Monett with the one exception that such cars as are loaded at Sarcoxie, just north of Monett and are destined to move via Kansas City, are picked up by the strawberry specials enroute, in order to avoid a back haul.

This concentration at Monett serves a number of purposes. It insures competent and fast re-icing for the runs to Kansas City and St. Louis and it renders diversions and reconsignments less complex. Usually, by the time the cars arrive at Monett shipping orders have been received. This enables the local yard forces to build up the strawberry specials and arrange for their dispatch on time.

Except at the height of the season, express cars are usually handled on passenger trains. If there are five or more cars, however, a special express train is run, a frequent occurrence when the movement is heavy.

Handling North and East of Monett

So far as dispatching is concerned, between the hours of 6 and 8 a. m. is the most efficient time for the strawberry specials to leave Monett. Owing to the on-time performance of the pick-up trains into Monett and the celerity with which the cars are iced there, it was possible to make this departure time on every one of these trains this season. The route from Monett to Kansas City is via Joplin, Mo., and Fort Scott, Kan. This is not a particularly heavy traffic line and the movement of one or two strawberry specials per day, particularly at the time they move, offers little or no interference to the regular traffic. To St. Louis, however, the specials must move over the main line of the Frisco via Springfield and it is here that the careful scheduling and dispatching and the reliable departure time has its greatest effect in enabling this movement to be superimposed upon the regular traffic with a minimum of interference to each.

Advance Notice of Movement Given

Advance notice of the movement and prospective arrival of the strawberry specials is given to the operating officers at St. Louis and Kansas City. At the latter point, a relatively small icing platform is frequently called upon to handle an express train and two freight trains, with a total of more than a hundred cars, in one afternoon. It is an island type platform, with a spotting capacity of 12 cars on each side, and this season 1,071 freight and 416 express cars were iced there, as compared with 194 freight and 314 express cars iced at St. Louis.

The express train arrives from two to three hours ahead of the freight trains, so that it may be iced and moved out of the way before the freight trains arrive.

Prior to the arrival of the freight trains, the upper deck of the platform is again restocked with ice to its capacity.

As soon as the first freight train pulls into the yard, a switch engine takes 24 cars to the ice dock, almost before the train stops rolling. As one cut of 12 cars is iced, the switch engine pulls it out, spots another cut of 12 cars and classifies the first 12 cars that have been iced. By this time, the 12 cars on the other side of the platform are ready to be pulled and this performance is repeated until all the cars are iced. By this time, the second strawberry special has arrived and the operations are repeated.

Some Typical Performances

On May 29, the day of heavy movement previously referred to, an express train with 38 cars of berries arrived in Kansas City, the cars were iced and taken to the Union Station for delivery to connections before the arrival of the first freight train, with 35 cars, at 2:45 p. m. Before the second freight train, with 33 cars, arrived at 3:58 p. m., the first train's cars had been iced and partially classified. The 68 cars were for delivery to 9 connections at Kansas City and were iced, classified and delivered to connections as follows:

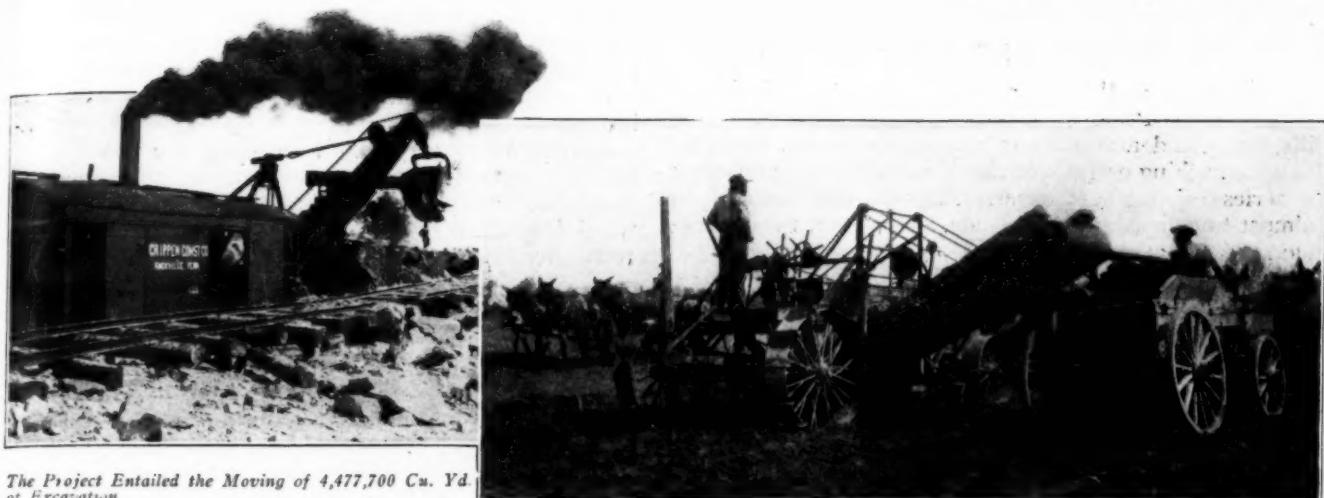
Chicago, Burlington & Quincy	6:00 p.m.
Chicago & Alton	6:00 p.m.
Chicago Great Western	6:05 p.m.
Chicago, Milwaukee, St. Paul & Pacific	6:25 p.m.
Chicago, Rock Island & Pacific	6:05 p.m.
Missouri Pacific	5:40 p.m.
Atchison, Topeka & Santa Fe	6:50 p.m.
Union Pacific	6:00 p.m.
Wabash	5:30 p.m.

To those who are familiar with the Kansas City terminal and know its widely scattered interchange tracks, these performances will seem particularly worthy of comment.

* * *



German State Railways Locomotive



The Project Entailed the Moving of 4,477,700 Cu. Yd. of Excavation

Frisco Opens Route Into Pensacola

Construction of 151-mile link in Alabama and Mississippi completes direct line from St. Louis and Kansas City to the Gulf Coast

THAT the enthusiasm which fired residents along the line of a new railroad in years past has not entirely disappeared is attested by the hearty welcome accorded the officers of the St. Louis-San Francisco during the course of the official opening of the new through route from Kansas City, Mo., and St. Louis to Pensacola, Fla., on June 28. But the Frisco management had already been apprised of this friendly attitude in a more substantial way through the good offices of the Tombigbee River Railroad committee in securing, by outright donation or purchases financed by local subscriptions, most of the right of way necessary for the construction of 151 miles of new line between Aberdeen, Miss., and Kimbrough, Ala.

The extension, by means of which this route was created, leaves the Memphis-Birmingham line at Aberdeen Junction, 123.6 miles west of Birmingham, Ala., and is made up of three separate units. The first, 12.1 miles long, consists of an existing branch of the Frisco extending to Aberdeen, Miss.; the second comprises the 151 miles of new line between Aberdeen and Kimbrough, Ala., while the third unit consists of the 142.5-mile line of the Muscle Shoals, Birmingham & Pensacola between Kimbrough and Pensacola, purchased by the Frisco in July, 1925, and since entirely rehabilitated for through main-line use at a cost in excess of \$3,000,000.

Advantages of the New Route

The significance of this new development to the Frisco is evident from the map, which shows the relation of the Pensacola extension to the rest of the system. With the bulk of its lines in Missouri, Kansas, Oklahoma, and Arkansas, the Frisco serves an area producing a wide diversity of products that must reach the market, and while it has had extensions into Texas in the Southwest and into Alabama in the Southeast, and possesses valuable terminals at Kansas City and St. Louis on the North, it has been compelled to share

much of the traffic originating on its lines with other lines through a division of the through haul.

This deficiency had been felt in particular with respect to the lack of a route over its own lines to ports on the Gulf of Mexico for the movement of oil and wheat originating on its lines in Oklahoma and Kansas, as well as products of manufacture originating at St. Louis and Kansas City or received in interchange at those terminals. The well-located and direct line from Memphis to Birmingham has long served as an outlet for iron and steel to the Northwest, as well as a link in a through route to the Southeast, and it was a logical step to take advantage of this line in developing a route to the Gulf at Pensacola.

Directness Is Feature of Route

The outstanding feature of the route thus evolved is its directness. From Memphis to Pensacola over the new route is only 30 miles more than the direct rail distance from Memphis to New Orleans. The difference is the same with respect to Kansas City, and is 10 miles less in the case of St. Louis. The relationship is obviously less favorable to Pensacola in a comparison of mileages between Kansas and Oklahoma points and Houston and Galveston, but the differences are not so great as might be inferred. Kansas City is only about 70 miles closer to Houston than to Pensacola, and the rail haul from oil refineries on the Frisco at Neodesha, Kan., to Pensacola does not exceed that to Houston by an amount that offers any serious obstacle to the movement to the more easterly of the two ports. The same comment applies with respect to the movement of Eastern Kansas wheat.

However, it is not alone in affording an outlet to traffic originating on the Frisco system that the new line will prove of value. It affords possibilities for the development of new joint routes. For example, traffic may be moved from Chicago to St. Louis on one of several routes and thence over the Frisco to Pensacola,

in competition with other lines to New Orleans or Mobile.

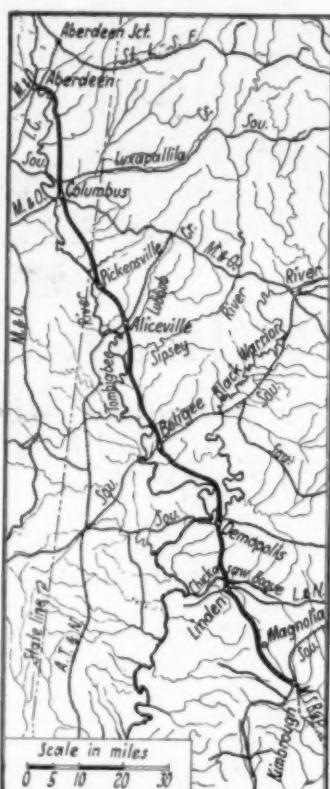
Why the M. S., B. & P. Was Acquired

Built between 1911 and 1915 as the Gulf, Florida & Alabama, the Pensacola-Kimbrough line suffered all the ills that could accrue from inadequate traffic, weak financial backing and discouraged management, and after a series of impotent receiverships it was reduced to almost unbelievable decrepitude. However, the possession of valuable franchise holdings in Pensacola, as well as excellent and well-located dock property on Pensacola Bay, and the favorable location of the line in an almost due northerly direction from Pensacola were advantages which could not be ignored in the consideration of various proposed routes between the Gulf and the existing lines of the Frisco. The incorporation of this property in such a line has resulted in the development of an exceedingly direct route, as indicated on the map.

Another consideration that played an important part in the adoption of a route entailing the acquisition of the M. S., B. & P. is the fact that the territory lying between its northern terminus at Kimbrough and the existing line of the Frisco at Aberdeen affords a favorable location for the connecting link, from the standpoint of construction as well as with the view to potential traffic of local origin. Not only does it traverse fertile but largely undeveloped agricultural areas throughout much of its length, but it passes through several towns of growing importance, among which are Columbus, Miss., a local distributing center, and Demopolis, Ala., where large beds of a soft calcareous deposit are being utilized in the manufacture of a portland cement. Furthermore, a connection with the Alabama, Tennessee & Northern, at Aliceville, Ala., provides direct access to the terminals of that road at Mobile, the advantage of which has been recognized through the establishment of an agreement between the two roads, covering the routing of through traffic into Mobile.

Characteristics of the New Line

From Aberdeen to Demopolis the new line follows the valley of the Tombigbee river, lying for considerable distances in bottom lands on the east side of that stream and at other points occupying higher land further east, for the purpose of avoiding swamps and overflow lands or long detours of the river's winding course. After crossing the Black Warrior river, about two miles from the confluence of that stream with the Tombigbee at Demopolis, the line leaves the river to cross

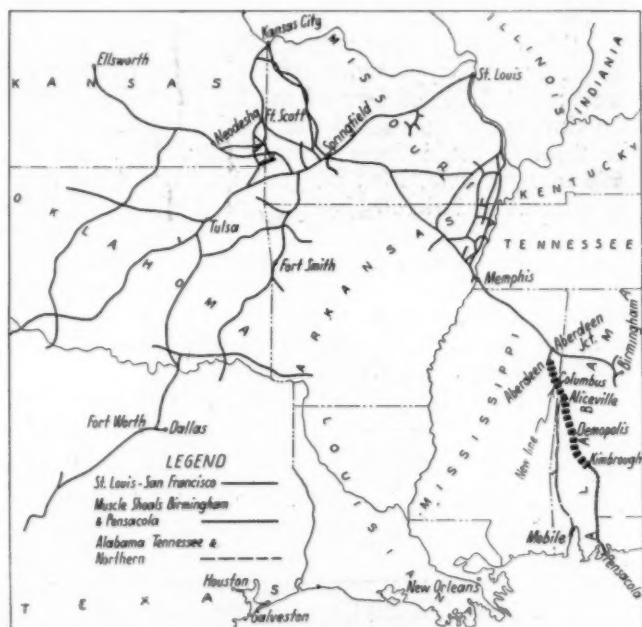


The New Line Extends from Aberdeen, Miss., to Kimbrough, Ala.

the watershed between the Tombigbee and Alabama rivers. This involves a rather sharp ascent to a summit between the river at Demopolis and the valley of Chickasaw Bogue near Linden and a climb over a second summit about midway between Linden and Kimbrough.

Throughout most of its length the line is subject to but moderate changes in elevation. The fall of the Tombigbee river is only a little more than 100 ft. between Aberdeen and Demopolis, a railroad distance of 109 miles, as indicated by the fact that the roadbed elevation is 198.5 at the upper end of the line and 92.7 across the flats on each side of the Black Warrior River bridge. There are a number of intermediate summits, however, the line reaching Elevation 243 at one point between Aberdeen and Columbus, Elevation 191.6 three miles north of Aliceville and Elevation 150.5 two miles south of Boligee. South of Demopolis the country embraces more marked changes in elevation, the line rising from Elevation 92.7 in Mile 108 to Elevation 219.9 in Mile 114. It then descends to Elevation 90.0 at Mile 124, only to make a second ascent to Elevation 252.1 at Mile 137 and finally descends to Elevation 90.2 at Kimbrough, Mile 151.

The line has a ruling grade of 0.5 per cent in both directions and a maximum rate of curvature of 4 deg., although there are only four 4-deg. curves. In general, the location is one in which a line built to these standards could be located with moderate grading, although in the rolling country between Boligee and Demopolis



The New Line in its Relation to the Rest of the Frisco System

and over the two summits between Demopolis and Kimbrough, the determination of the most economical line called for the exercise of skill and much painstaking effort. At only one point, namely just south of Demopolis, was it necessary to introduce distance to make the ascent within the limits of a 0.5 per cent grade.

Grading Was Moderate

Between Aberdeen and Columbus, where the line lies largely in the bottom lands, embankments made from side borrow predominate, the line being entirely on fill for the first three miles to place it above high

water. The heaviest grading is in Mile 1 with 49,000 cu. yd. of embankment. Just south of Columbus at the crossing of Luxappalila creek in Mile 27, the total embankment quantities in one fill almost a mile long, amounted to 67,300 cu. yd. The only cuts of any consequence on this portion of the line were encountered at Pickensville, Miles 47 and 48, totaling 27,000 and 37,800 cu. yd. respectively, and in Miles 59 and 60 just south of Aliceville, totaling 41,800 and 37,900 cu. yd. respectively; the largest cut is 2,800 ft. long with a maximum depth of 25 ft. Most of the material moved into an embankment at the crossing of Lubub creek which is 4,000 ft. long, has a maximum height of 20 ft. and required 96,500 cu. yd. of fill.

South of Boligee the line passes through a cut 3,600 ft. long with a maximum depth of 35 ft., involving the excavation of 89,000 cu. yd. From the northern end of the line to this point, the material encountered was entirely earth, largely a red clayey sand in the cuts with some alluvial material in the borrow pits. However, in this cut the lower 6 to 15 ft. consisted of Selma shale, a soft calcareous material which could be removed with little use of explosives. Material of this



Draglines Were Used Effectively on the Work

kind was encountered in a cut in Mile 90, but at Demopolis the bed of Selma shale covers an extended area with little or no covering of soil, and was encountered in all cuts for a distance of 8 miles to the south. In this territory the material was of varying degrees of hardness, and excavation entailed considerable use of explosives. The largest volume of rock excavation was required in Mile 109, at the site of the station grounds at Demopolis, where a cut 1,600 ft. long

by 300 ft. wide involved 81,500 cu. yd. of rock excavation. This same mile embraced an embankment 1,200 ft. long with a maximum height of 50 ft., requiring 35,700 cu. yard. of fill. In Mile 111 there are also practically continuous embankments for 4,700 ft. with heights up to 40 ft., which required 81,900 cu. yd. of fill.

Throughout the rolling country south of Demopolis as far as Mile 139 some excavation in cuts was required



The Bridge Across the Black Warrior River, Showing Lift Span Partly Open

in every mile, but the embankments predominated. The heaviest work south of Linden was in Mile 135 with 54,600 cu. yd. of embankment and 63,000 cu. yd. in cuts, of which 25,400 yd. was classified as solid rock and 18,900 cu. yd. as loose rock. In Mile 137, one cut 2,200 ft. long with a maximum depth of 32 ft. contained 31,900 cu. yd. of solid rock, and about 10,600 cu. yd. each of loose rock and earth. The remaining 13 miles into Kimbrough involved relatively light work, most of the line being on low embankments.

Construction Methods

The construction of the roadway entailed the moving of 4,477,000 cu. yd. of material, of which 2,376,600 cu. yd. was from borrow and 2,101,000 cu. yd. was exca-



Track Laying Was Expedited by Building Trestles Continuous Across Openings Provided for Steel Spans

vation in cuts, the cut excavation being classified as 1,346,800 cu. yd. of earth, 295,300 cu. yd. of loose rock and 459,000 cu. yd. of solid rock. Of the total quantities in embankments, 55 per cent was from side borrow, and of this, 65 per cent was team work and the remaining 35 per cent was handled with draglines. The draglines were remarkably effective in spite of exceedingly formidable obstacles in the way of wet and soft borrow pits, and the embankments were well-formed. In one or two cases the work was greatly expedited by



A Good Quality of Water Is Obtained From Free Flowing Wells

employing two machines in borrow pits on opposite sides of the embankments.

Team work embraced all varieties of methods and equipment, including elevating graders, slips, fresnos, and wheeled scrapers. This work was sub-contracted to many different individuals. While most of the rail



An Example of the Stations Provided at Some of the Smaller Points on the Line

haul material was dumped from construction trestles, ordinary practice was modified in several short fills south of Demopolis by the use of cableway spans. In handling trains on these suspended spans, the precaution was taken to uncouple the cars before backing them out, the train being controlled by a cable from the locomotive to the forward car. This was done so that if one car tipped over it would not carry other cars with it.

With much of the line in low bottom lands and swamps, the contractors anticipated more or less difficulty in handling wet material, but rains of unusual intensity and duration, which set in immediately after the work was opened in December, 1926, continued into January, and were followed by another period of heavy rainfall during February and March, imposed unusual

difficulties. Roads became impassable, large areas were flooded, and the soil in the bottoms became too soft and sticky to handle. As a consequence very little progress could be made until late in March, 1927.

The roadbed width is 20 ft. on embankments and 26 ft. in cuts, with side slopes of 1 to 1 in cuts and 1½ to 1 on fills except on embankments over 20 ft. high, where this was increased to 1¾ to 1. Shrinkage allowance was made in the height of embankments to the amount of 10 per cent for team work, 12 per cent for material dumped from trestles and 15 to 25 per cent for dragline work. Contrary to the custom prevailing on most railroad construction in recent years, the grading on this project was awarded entirely on the basis of unit prices for haul as well as yardage, all haul being paid for on shovel work, but with 500 ft. of free haul for team work, which was employed most extensively on side-borrow work.

The line is laid with 90-lb. relayer rail. This was



A Typical Water Station Along the New Line

sorted, loaded and delivered by the railroad, but all tracklaying and ballasting was done by contract. The ties are 6 in. by 8 in. by 8 ft., untreated. The ballast is gravel, that used on a portion of the line north of the Black Warrior river being hauled in from pits on the lines of the Frisco, while that used on the southern portion of the line came from a pit on the Muscle Shoals, Birmingham & Pensacola.

A passing track, 4,000 ft. long and an industry track, 800 ft. long, were provided at intervals of about 12 miles, except at Columbus, Aliceville, Demopolis and at a few other points where more extensive facilities were necessary, and at Magnolia, Ala., which was selected as the site of the intermediate terminal between Amory, Miss., on the main line, and Pensacola. The immediate development at this point includes a 4,800-ft. passing track, three yard tracks totaling 6,900 ft., an 800-ft. industry track, a water station, a coaling station with a 900-ft. coal delivery track and a combination station and office building. A spur track, 3,000 ft. long was also built at Demopolis to serve the cement mill at that place.

Water stations have been provided at Hamilton, Miss., Columbus, Pickensville, Ala., Pleasant Ridge, Boligee, Demopolis, and Linden. Water is obtained

from streams on the southern portion of the line and city water is purchased at Columbus but at Hamilton, Pickensville, and Pleasant Ridge, a very good quality of water is obtained from free flowing wells, derived from water-bearing strata at only a moderate depth below the surface. For example, a five-inch well, 300 ft. deep at Hamilton, delivers 300 gal. of water per minute to a 30,000-gal. concrete basin from which it is pumped to a 50,000-gal. cypress tank on a wood frame by a pump driven by a 15-hp. Fairbanks-Morse Type "Y" engine. The water facilities at Pleasant Ridge are supplemented by a coaling station.

By far the greater number of bridges on the line are open deck pile trestles but there are also 17 steel bridges with an aggregate of 21 spans, ranging from short spans over highways to through and deck girders and through truss spans over the more important streams. Concrete for the substructures of these spans totaled 6,525 cu. yd.

The new steel spans were fabricated by the Virginia Bridge Company, and all of the steel was erected by the Kansas City Bridge Company. Most of the steel spans are incorporated in longer structures, consisting primarily of pile trestles, and as the steel work could not be delivered to the structure until the track was laid, the trestles were made continuous across the girder or truss-span openings, except at the Black Warrior bridge, to permit the continuation of tracklaying and to serve as falsework for erection.

The Black Warrior River Bridge

The principal structure on the line is the crossing of the Black Warrior river, which consists of a 184-ft. pin-connected through truss lift span with supporting towers on adjacent 100-ft. through riveted truss spans. This structure is flanked by 1,400-ft. and 1,484-ft. of pile-trestle approaches on the north and south ends respectively. The substructure comprises concrete piers built in open cofferdams.

The distinctive feature of the construction of this bridge was the erection of the lift span without the use of falsework, to avoid interference with navigation and the hazards which falsework would have entailed during high water. The span was erected in the partly raised position by a modified cantilever method in which the bottom chords were supported on temporary steel brackets attached to the towers. As the erection of this bridge was the key to the completion of the line, it was of marked advantage that the steel could be delivered to the site on barges from the fabricating plant

at Birmingham and thus avoid the delay incident to withholding operations until track could be laid to the bridge.

The pile trestles, of which 24,520 lin. ft. were built, are wooden structures with five-pile bents, having 14-in. by 14-in. caps, spaced 14 ft. center to center. The decks have three 8-in. by 16-in. stringers to the chord and the ties are 6 in. by 8 in. by 9 ft., laid flat 12 in. center to center. The material is all native pine except the stringers, which are Douglas fir. No treated material was used except creosoted piles in the approaches to the Black Warrior bridge. These ranged from 24 ft. to 40 ft. in length and were driven to a minimum penetration of 14 ft., with the aid of a water jet. The tops of the caps and the stringers in this structure were covered with 16-gage galvanized iron.

A number of concrete box culverts were built and a considerable number of smaller waterways were provided for by the use of 13,375 lin. ft. of Massey concrete culvert pipe in diameters ranging from 18 in. to 36 in. Corrugated metal culvert pipe was used in side ditches at highway crossings. The right of way is fenced with galvanized wire on creosoted posts.

Grade separation played but a small part in this project. The crossings with six other railroads as well as with most of the highways and streets are at grade. Where conditions favored grade separation, particularly at Demopolis, highway grades were separated, by means of under crossings. In a number of cases, also, the highways were relocated to eliminate unnecessary crossings. Interlocking plants have been provided at the railway crossings at Columbus, Boligee, Demopolis and Linden.

The new line was built under the general supervision of Colonel F. G. Jonah, chief engineer and H. B. Barry, principal assistant engineer of the St. Louis-San Francisco. T. W. Kinsley, division engineer, Columbus, Miss., located the line and had direct charge of construction. The construction was handled under three general contracts covering both grading and bridge work. Ross-Wogan & Co., Kansas City, Mo., had the general contract for the 58 miles from Aberdeen to Aliceville, C. G. Kershaw Contracting Company, Birmingham, Ala., handled the work for the 51 miles from Aliceville to Demopolis while J. A. Kreis & Sons, Inc., Knoxville, Tenn., constructed the remaining 43 miles from Demopolis to Kimbrough. The Kershaw company handled the ballasting and tracklaying from Aberdeen to Demopolis while on the remaining 43 miles of line the Kreis Company laid the track and the ballasting was done by R. F. Carr, Memphis, Tenn.

* * *



Pennsylvania Trains Entering and Leaving Tunnel at Baltimore

Block Signal Mileage, 1928

THE Interstate Commerce Commission has issued its regular annual tabulation of statistics, prepared by the Bureau of Signals and Train Control Devices, showing the mileage of railroad in the United States operated under the block system as of January 1, 1928, including a table (No. 7) showing mileage equipped with automatic train control, together with collateral information; and also the mileage on each railroad on which telephones are used for the transmission of train orders. The corresponding report for the preceding year was noticed in the *Railway Age* of October 8, 1927, page 686. This earlier statement showed the length of railroad operated under the block system as almost exactly the same as it was one year before, the increase in automatic signals having been offset by the decrease in the use of the manual block system; but the present report (Table No. 1, three pages) shows a net increase in 12 months of 2,164 miles of road. The totals, January 1, 1928, are:

Total miles of road, automatic.....	53,616.5
Total miles, non-automatic.....	59,375.9
Total, both kinds.....	112,992.4
Increase in automatic.....	4,150.4
Decrease in non-automatic.....	1,986.2

The bulletin gives the usual table showing sections of road which are operated jointly by two or more railroads; a long list, now filling half a page.

The principal increases and decreases in block signal mileage in 1927 are given as below (miles of road):

Name of Road	Increase		Decrease,	
	Automatic	Non-automatic	non-automatic	non-automatic
Atchison, Topeka & Santa Fe.....	275	...	167	3
Atlantic Coast Line.....	36	...	13	...
Baltimore & Ohio:				
Eastern lines.....	16		17	
Western lines.....	129	159	...	...
Boston & Maine.....	...	13	...	...
Chesapeake & Ohio.....	...	108	...	...
Chicago & Alton.....	19	18	...	...
Chicago & Eastern Illinois.....			7	
Chicago, Burlington & Quincy.....	259	...	259	
Chicago, Great Western.....	30	...	30	
Denver & Rio Grande Western.....	135	...	12	
Detroit United Lines.....	...		65	
Grand Trunk.....	10	...	8	
Louisville & Nashville.....	66	...	6	
Nashville, Chicago & St. Louis.....	114	...	28	
New York Central.....	91	...	89	
C. C. C. & St. L.....	113	...	34	
Peoria & Eastern.....	115	...	...
New York, Chicago & St. Louis.....	167	...	...
New York, New Haven & Hartford.....	49	64	...	
Norfolk & Western.....	229	...	221	
Pennsylvania System.....	312	...	401	
Rutland.....	37	...	...
Seaboard Air Line.....	237	...	223	
Southern Railway System.....	1,138	...	602	
Southern Pacific System.....	240	...	104	
Texas & Pacific.....	40	...	40	
Union Pacific System:				
Los Angeles & Salt Lake.....	389	...	...
Wabash.....	24	...	25	

Preceding the regular tables there is one showing, for each of the 16 roads reporting, the extent to which visual cab signals are in service. This table shows:

	Miles of road
Atchison, T. & S. F.....	176
Boston & Maine.....	100
Central R. R. of N. J.....	66
Chicago & North Western.....	336
Chicago, Mil. St. P. & P.....	211
Delaware, L. & W.....	141
Illinois Central.....	219
Long Island.....	21
Louisville & Nashville.....	298
N. Y., N. H. & H.....	60
Norfolk & Western.....	239
Oregon-Wash. R. R. & Nav. Co.....	84
Pennsylvania System.....	612
Reading—	
Atlantic City.....	56
Richmond, F. & Potomac.....	102
Union Pacific.....	225

All of these cab signals are installed in connection with continuous automatic train control.

Table No. 2, showing mileage of different kinds of signals in use shows: Exposed disk, 173 miles of road;

enclosed disk, 1,070 miles; electro-pneumatic semaphores, 194 miles; electric motor semaphores, 38,736 miles; electro-gas semaphores, 617 miles; color-light signals, 11,044 miles; position light signals, 1,446 miles, including (on the Baltimore & Ohio) 302 miles of color-position-light signals. The four older types show totals less than in the last preceding report. Motor semaphores have increased from a total of 38,202 miles to 38,736, and light signals from 8,194 to 12,491 miles.

Table No. 7 shows the miles of road, miles of track and number of locomotives equipped with automatic train control or train stop devices. This table, unlike the others in the bulletin, is brought down to July 1, 1928.

Automatic Train Control—Data from Table 7

Name of Road	Device *	Miles of Road Equipped	Number of Locomotives Equipped
Atchison, T. & S. F.....	c	175	88
Atlantic Coast Line.....	i	291	137
Baltimore & Ohio.....	i	127	230
Boston & Albany.....	i	199	241
Boston & Maine.....	c	100	134
Central R. R. of N. J.....	c	115	123
Chesapeake & Ohio.....	i	125	67
Chicago & Alton.....	im	86	47
Chicago & Eastern Ill.....	iec	142	159
Chicago & N. W.....	c	493	360
Chic., Burl. & Q.....	im	164	100
Chic., Ind. & Louis.....	i	160	48
C., M., St. P. & P.....	c	212	91
C., R. I. & P.....	iec	337	163
Cincin., N. O. & T. P.....	i	332	178
C., C. C. & St. L.....	i	235	98
Delaware & Hudson.....	i	193	161
D., L. & W.....	c	257	202
Erie.....	i	245	129
Galveston, H. & S. A.....	im	171	61
Great Northern.....	im	229	69
Illinois Central.....	e	219	135
Lehigh Valley.....	i	280	352
Long Island.....	c	48	265
Louisville & Nash.....	i	298	93
Michigan Central.....	i	268	238
Missouri Pacific.....	im	50	39
New York Central.....	i	876	1,191
N. Y., Chicago & St. L.....	i	140	57
N. Y., N. H. & H.....	c	155	200
Norfolk & Western.....	c	239	89
Northern Pacific.....	im	216	44
Ore.-Wash. R. R. & Nav.....	c	84	41
Pennsylvania.....	c	212	418
Pere Marquette.....	i	135	95
Pittsburgh & L. E.....	i	64	116
Pitts., C. C. & St. L.....	c	335	430
Reading.....	c	101	132
Rich., Fred. & P.....	c	102	68
St. Louis-S. F.....	im	106	111
Southern.....	i	2,376	662
Southern Pacific.....	im	201	212
Union Pacific.....	c	225	129
W. Jersey & Seashore.....	c	56	132
Total.....		11,185	8,127

* In the second column, the type of each device is indicated by letters, as follows: continuous induction, *c*; intermittent induction, *i*; intermittent magnetic, *im*; intermittent electrical contact, *iec*.

Four roads have equipped 2,841 miles of line with automatic train control voluntarily. These items, included in table No. 7, are: Chicago & North Western, 137 miles; Michigan Central, 78½ miles; New York Central, 550 miles; Southern, 2,075 miles.

Table 7 also shows 198 locomotives equipped with automatic train control for operation over foreign roads, as follows:

Central of N. J., 9 locomotives, intermittent induction; Chesapeake & Ohio, *i* 28, *c* 4; Chicago & E. I., *i* 40; Chicago, St. Paul, M. & O., *c* 2; Elgin, Joliet & Eastern, *iec* 30; Erie, *i* 7; Minneapolis & St. Louis, *iec* 3; M.-K.-T. *im* 2; Norfolk & W., *i* 7; Pennsylvania, *i* 38; Reading, *i* 16; Southern, *i* 8 and *c* 4. Adding these items to the total shown in the table, 8,325, we have a final total of 8,325 locomotives equipped for automatic train control.

Telephones.—The length of railroad on which telephones are used for the transmission of train orders is 149,052, or 5,678 miles more than on January 1, 1927; number of miles on which the telegraph is in use, 108,316, or 5,343 miles less. The total of miles of road reported is 247,712, indicating that on considerable sections both telegraph and telephone are in use.

Lehigh Valley Consolidates Inter-Shop Transport

*Builds concrete roads—Extends
work to all plant haulage—
Saves labor and time*



Types of Inter-Shop Transport Equipment at Sayre, Pa.

AT Sayre, Pa., where the system shops and general store of the Lehigh Valley are located, all transportation of company materials not requiring rail movement has been consolidated into a single unified system of material deliveries and inter-shop transport. This work, which is now conducted by the store department under the supervision of a foreman, who gives all his time to it, embraces the delivering of all supplies from the storehouse to mechanics, the hauling of materials from the shops to the store, and the moving of material in and between shops. It also extends to all other operations where the equipment can be used to advantage, such as the cinder handling, snow shoveling, and scrap collection. The equipment consists of:

Transport Equipment

- 1 Automobile truck, two-ton
- 4 Electric platform trucks
- 1 Electric crane, 3,000-lb. capacity
- 1 Gasoline crane tractor with revolving boom, one-ton capacity
- 4 Heavy duty gasoline tractors
- 2 Light duty gasoline tractors
- 24 All-steel trailers, 3 ft. by 5 ft., rubber tired, three-ton capacity, fifth-wheel type
- 5 Steel and wood trailers, 3 ft. by 6 ft., rubber tired, two-ton capacity
- 7 Steel and wood trailers, 3½ ft. by 7 ft., four-wheel steering, steel wheels, two-ton capacity
- 7 Dump trailers, four-wheel steering, 1½ cu. yd. capacity, steel wheels
- 4 Dump trailers, fifth-wheel type, 1½ cu. yd. capacity, rubber tired
- 20 Trailers with side stakes, for lumber, etc.
- 1 Four-wheel barrel-type trailer for paint
- 2 All-steel drop-frame trailers with drop sides to act as a ramp

Cuts Lost Motion 50 Per Cent

Prior to the inauguration of the present delivery system each department had certain equipment which was operated under the jurisdiction of that department. No attempt was made to operate the equipment on regular schedules, it being the practice in all departments to send a tractor or truck whenever there was work to do, regardless of whether some other machine was working in the same territory. This resulted in much lost motion and the equipment was operating empty about 50 per cent of the time. Under the new system the equipment is all dispatched from the general storehouse and no special trips are made when the movement can be handled on a regular trip.

Each train is manned by a tractor operator and helper

and handles all new materials from the storehouse to the shops, and all materials and parts between the various departments and shops in the territory covered. The routes are laid out to pass all salient points where the loads accumulate and deliveries are made. Delivery stations, established by the mechanical department, are located throughout the plant, but it is the endeavor to deliver, as nearly as possible, to the spot where the materials are actually to be used.

Make All Inter-Shop Movements

The number of trailers carried on each trip varies from two to six, depending on the volume of business. The tractors leave the storehouse with trailers loaded with new material from stores stock and carry sufficient empty equipment to handle the inter-shop movements enroute. The operators soon become familiar with conditions on their particular routes and can anticipate the amount of work on each trip. If they carry a load of driving rods or stayplates or spring rigging from the locomotive shop to the blacksmith shop for alterations or repairs, they know the material must be taken back, and about when it will be ready for the return movement.

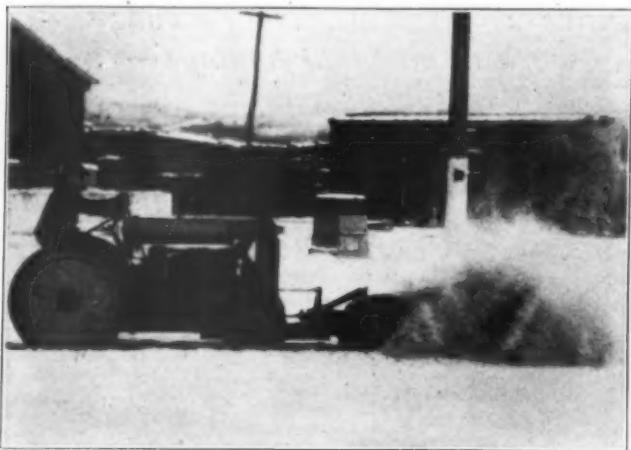
No Verbal Orders are Accepted

No verbal orders are accepted for the transportation service. The delivery of new material is governed by a carbon copy of the material order, which shows the material required and the delivery point. Inter-department and inter-shop movements are governed by inter-shop transportation orders. In designing the form for inter-shop work care was taken to make it as simple as possible to avoid burdening the shop foremen with unnecessary detail. The form is 3½ in. by 5 in., printed on yellow paper to distinguish it from a material order, and is bound in pads of 100 for convenience. It is named "inter-shop transportation order" and has spaces for showing the shipping point and destination, and the time of ordering and completing shipment.

Routine of Ordering

Orders for material and transportation are deposited in station boxes by the shop foremen for the tractor

operators. The orders for new material are brought to the storehouse on the return trip, where they are stamped with a time stamp and turned over to the man in charge of loading trailers for delivery on the next trip. Orders for transportation are examined by the operators and the movement made on the same trip in which the order is picked up. When a trailer is re-



Tractor with Rotary Brush for Clearing Snow from Roads, and Car Repair Tracks

quired for a full load the foreman orders an empty trailer left at a certain point and when the load is ready, he places another order to have it moved.

Like Train Operation

In directing the equipment throughout the plant we have endeavored to follow the principles of train operation and to avoid having more than one machine in the same place. The main storehouse is the central dispatching point and is the "classification yard" where all trains are made up. When material loaded on one route is to be carried to a point on another route the load is first brought to the storehouse. If it is a full trailer load the trailer is switched to the train being loaded for the route in question, while, if the load con-

sists of a few pieces, it is transferred to an outgoing trailer for that route. In this way the equipment is utilized to the full extent as the loads are carried in both directions and special trips are eliminated.

Assembling of Material for Movement

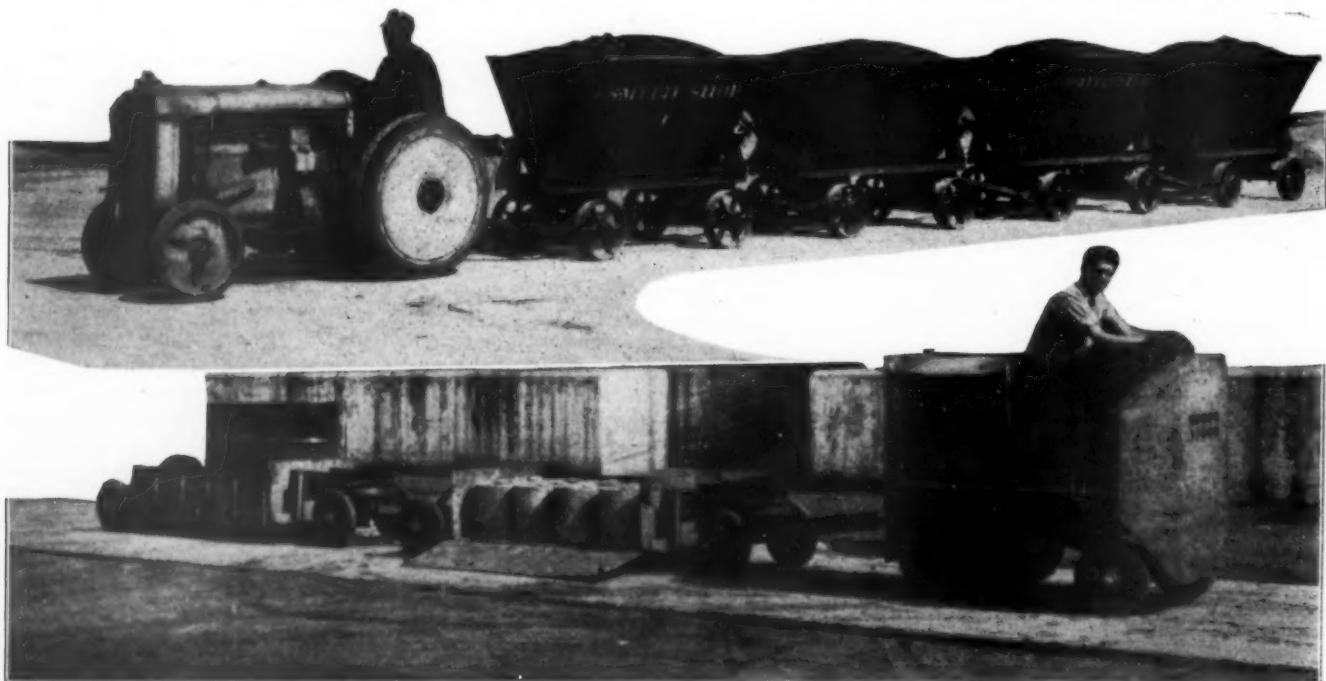
Care is exercised in assembling the material on the trailers for the various departments so that material for different routes is not loaded on the same trailer. The effort is also made to group the material for each station and to load in station order to save time in the shop and facilitate unloading by operators.

Attend All Shop Meetings

The loading of new material on trailers at the general storehouse for shop departments is an integral part of the delivery system and this work is, therefore, performed by the transport men. This places full responsibility on the delivery system for the prompt furnishing of material to the shop, and avoids the possibility of shifting the blame for any delays on section stockkeepers or others. This arrangement also simplifies the problem for shop foremen as all questions pertaining to the furnishing of materials are handled with the director of the transport department, who is continually making trips through the various shops and who also attends the meetings of the shop foremen, thereby keeping in close touch with shop conditions.

Save \$5,000 in Flue Handling

The work was started at Sayre with the co-operation of the mechanical department, and has been constantly extended as new applications for the equipment have been found. One of the operations, which has resulted in a large money saving as well as a more efficient shop operation, is the movement of locomotive boiler flues between the flue shop and locomotive erecting shop. When old flues are removed from boilers they are placed in racks which can be lifted by an overhead crane. These racks, which hold a complete set of flues weighing from 8 to 11 tons, were formerly loaded on a flat car and moved to the flue shop by a switch engine. This



Upper—Dump Trailers Used in Cleaning Engine Pits. Lower—Low Trailers with Drop Sides for Handling Heavy Materials

usually required from two hours to half a day, depending on the condition of the yard at the time. A concrete roadway was built between the locomotive shop and flue shop, and two standard shop trailers were reinforced and equipped with swinging bolsters to handle the flues. These trailers are coupled together and operated as a single unit, the advantage of the arrangement over a single trailer with a long wheel base being that it follows the tractor through narrow runways and around curves, can be turned in a smaller radius, and the weight is carried on four pairs of wheels instead of two. Under this tractor-trailer system, a set of flues can now be moved from one shop to the other in approximately 10 minutes. The mechanical department estimates the saving to be \$4,968 a year.

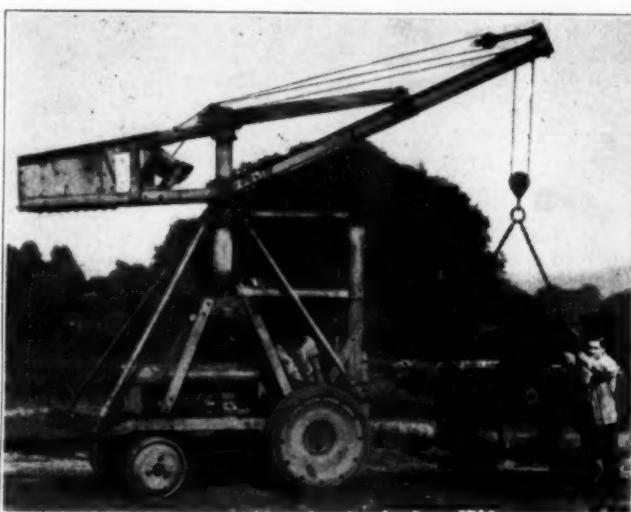
Clean Engine Pits Cheaper

Another operation which is saving money as well as aiding mechanical department operations is the collection and disposal of ashes, refuse, and small scrap which accumulates in and around the engine pits in the locomotive shop. These pits are cleaned once a week. For the removal of ashes, old broken arch brick and other non-inflammable material for the dump, iron body rail cars were used. These cars were equipped with a ring in each corner for handling by an overhead traveling crane. The cars were moved from pit to pit by the crane and when full were set on a cross track in the center of the shop, then pushed out of the shop to the dump where they were unloaded by hand. Old wood, paper, dirty waste and other inflammable materials were sorted out and taken to an incinerator in wheel-barrows, and small scrap and nuts for reclaiming were also collected with wheel-barrows.

When the mechanical department is ready, a train is now assembled, consisting of a tractor, three $1\frac{1}{2}$ yd. gravity dump trailers and two standard material trailers equipped with box bodies. This train passes through the erecting bays, back of the engine pits, and the accumulation from the pits is loaded by shop labor. Two of the dump trailers are loaded with ashes, old brick and other material going to the dump. One dump trailer is loaded with the inflammable material for the incinerator. One box trailer is loaded with miscellaneous scrap for the scrap dock, and another box trailer is loaded with reclaimed nuts. In this way the entire accumulation is disposed of in one operation. The saving is between \$500 and \$600 a year.

There is also located at Sayre a 46-pit division roundhouse. The labor force at this point formerly consisted of eight men and the major portion of their time was spent in cleaning the engine pits and the combustion chambers. Ash and rubbish cars were placed outside the roundhouse and the dirt carried to these cars in wheel-barrows. A gasoline tractor with a short turning radius and gravity dump trailers are now being used for

this purpose. The loads are taken direct to the dump, thus eliminating the use of four rubbish cars per month and the expense of switching and unloading. Scrap from the engine pits and various places in and around the enginehouse is also collected with tractor and trailers, which haul it directly to the scrap dock. The time saved on these two operations has made it possible to



Crane Tractor with Revolving Boom, Used in Loading and Unloading Trailers and Cars

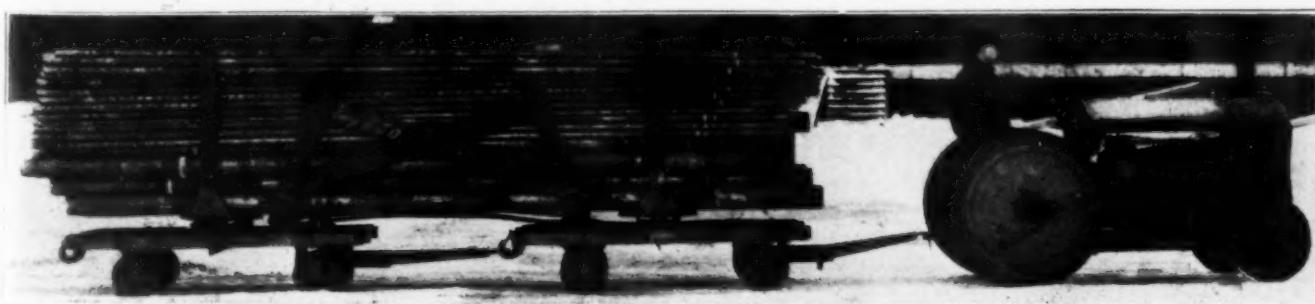
reduce the labor force at the enginehouse from eight to four men at a saving, after deducting all charges such as interest on investment, depreciation, etc., of \$3,700 per year.

Roads of Concrete

Before starting the transport system, approximately 20,000 sq. ft. of concrete roadways were laid, most of which are 8 ft. wide; also, much of the equipment is rubber tired. The good roads and rubber tires have facilitated quicker deliveries and also save much wear and tear on the equipment, considerably reducing the cost of maintenance.

Principal Economy is Saving of Time

While much is said about the payroll savings where machine transportation has replaced hand methods, and while these savings have made the changes well worth while at Sayre, the principal economy of the work is in the saving of time. Time represents money around an industrial plant and the quicker movement of material and parts is reflected in a smoother running shop organization and increased production.



Trailers Equipped for Moving Boiler Flues Between Locomotive and Flue Shops

Van Sweringens Purchase 67 Per Cent of B. R. & P. Stock

ANNOUNCEMENT was made on October 9 by O. P. and M. J. Van Sweringen that they had acquired approximately 67 per cent of the total stock of the Buffalo, Rochester & Pittsburgh, this amount being the Iselin-Roosevelt holdings. The net price paid was \$100 a share and according to the announcement, the Van Sweringens agree to pay the same price for minority holdings, should the holders care to dispose of their stock and deposit it with A. Iselin & Company before 3 p.m. December 10, 1928.

Statement of Van Sweringens

The formal statement given out by the Van Sweringen brothers regarding the acquisition is as follows:

"As formally announced today by A. Iselin & Co., we have purchased the Iselin-Roosevelt holdings in the Buffalo, Rochester & Pittsburgh, comprising about 67 per cent of the total stock. We have also willingly agreed to the sellers' stipulation that we offer the same net price of \$100 per share to all minority stockholders.

"We have in mind that this step may facilitate the Eastern grouping in an effort to reach an agreement which will be fair to all the roads concerned, and in the general public interest. Mr. W. T. Noonan continues as President of the road, which will be operated as in the past in the interests of the territory served."

The A. Iselin & Company Statement

The A. Iselin & Company statement to all B. R. & P. preferred and common stockholders, mentioned in the foregoing, is as follows:

"Notice is hereby given to all preferred and common minority stockholders of the Buffalo, Rochester & Pittsburgh Railway Company that an offer has been made by the Messrs. O. P. and M. J. Van Sweringen to purchase at \$100 per share for the preferred stock and \$100 per share for the common stock all the preferred and common shares which may be deposited with us before 3 P.M. on Dec. 10, 1928.

"Stockholders desiring to avail themselves of this offer must deliver their certificates to us at our office, 36 Wall Street, New York City, before 3 P.M., Dec. 10, 1928, duly endorsed in blank and in proper shape for transfer, and with the necessary Federal and State stock transfer tax stamps attached.

"The undersigned and associates, who have for many years held a majority interest in the railway company, have agreed to sell to the Messrs. Van Sweringen their own majority holdings of preferred and common stock, aggregating about 67 per cent of the total outstanding stock of the railroad, at the same net price which is now offered the minority holders.

"In agreeing to sell their majority holdings, we and our associates stipulated for an offer of the same net price to the minority, to which the Messrs. Van Sweringen agreed. The gross price to be received by the majority holders is \$102.50 per share of preferred and \$102.50 per share of common

stock, but the net price is the same as that offered to the minority, since in arranging the transaction the majority interests have incurred expenses in the shape of compensation to representatives and for legal and other items aggregating approximately the amount to be realized from the differential of \$2.50 per share.

"Neither the undersigned nor any other majority stockholder will receive any other compensation for their own services in connection with this transaction, except any such commissions as they may be required to receive under the rules of the New York Stock Exchange. Holders of minority stock wishing to accept this offer will deliver their certificates to the undersigned at 36 Wall Street, New York City, before 3 P.M. on Dec. 10, 1928, at which time this offer expires."

Burlington Tests Multiple Unit Gas-Electric Cars

TO demonstrate the feasibility of multiple unit operation of gas-electric rail cars, the Chicago, Burlington & Quincy made a test or exhibition run on October 2 of a four-car train from the Union Station, Chicago, to Downers Grove, Ill., and return. The train consisted of two standard Burlington 46-ton, 100-passenger suburban coaches, located between a Mack 270-hp. gas electric rail car with a double power plant, recently purchased by the Burlington, and a Mack 405-hp. car with a triple power plant, which will soon be given extensive tests on the Illinois Central. The gas-electric cars weighed 57 tons and 67 tons, respectively. Twenty-one schedule stops were made on the way from Chicago to Downers Grove, the train being run as an express without stops on the return trip. About 60 railroad men and others interested in automotive rail equipment were present.

With suitable temporary electrical connections between the two motor cars, the train was operated on the outgoing trip by an engineman in the cab of the 72-ton, triple-power-plant car. On the return trip, without any change in arrangement of the cars, the train was operated in the reverse direction, the engineman controlling the train from the driver's seat in the forward end of the 66-ton double-power-plant car.

The two motor cars were built by the Pullman Car & Manufacturing Corporation, the electrical equipment being furnished by the General Electric Company. The Burlington car, equipped with Melcher-Hyatt roller bearings, will be operated in local branch line service out of Kansas City.

Descriptions of the new Mack gas-electric rail cars have been published in the *Railway Age*, the triple power plant car built for the Reading being described on page 1595 of the issue of June 16, 1928.



Four-Car Gas-Electric Train which Made Exhibition Run on the Burlington on October 2

Northern Merger Case Submitted

*Conditional approval subject to modification
to fit general plan suggested*

WASHINGTON, D. C.

TWO and a half days of oral argument before the Interstate Commerce Commission on the application of the Great Northern Pacific for authority to acquire control of the Great Northern, Northern Pacific, and Spokane, Portland & Seattle was concluded on October 5 after counsel for the roads proposing the merger had suggested that if the commission saw merit in some of the objections advanced to the granting of the application it might issue a conditional order under which the plan might later be modified.

Among the conditions suggested was one by which the commission might reserve the right to abrogate the proposed 99-year lease of the three roads to the new company, if found inconsistent with a nation-wide plan for the consolidation of the railways of the country which might be adopted by the commission, and suggestions also were made of a possible reservation to enable the commission later to make some other allocation of the Burlington, now owned jointly by the Great Northern and Northern Pacific, or a provision that the stock of the Burlington should not be transferred directly to the Great Northern Pacific company. The suggestions were made by D. F. Lyons, general counsel of the Northern Pacific, in his concluding statement, and Walker D. Hines, eastern counsel for the Great Northern, also urged the commission to approve the plan conditionally rather than lose the opportunity to progress in the direction of unification at this time.

"Whatever inconvenience there might be in rearranging this situation, after once authorized in this manner and subject to that condition," he said, "it would be vastly less than the inconvenience and loss which would come from depriving the public of the transportation economies and other benefits which would come from this unification, and which otherwise might be enjoyed through all the intervening years before the commission did undertake to establish such a general plan."

F. H. Wood, representing the Chicago, Milwaukee, St. Paul & Pacific in opposition to the plan, said that as the suggestion of a conditional order had been made only in the concluding arguments, if the commission should seriously consider such a solution of the matter, the Milwaukee ought to have the opportunity to be heard in reply. "There is a very considerable distinction," he said, "between the preservation of the status quo in the Central Pacific case pending final decision, and the creation of an entirely new status with a conditional order which would be accomplished here."

Following the arguments of Messrs. Lyons, Hines and Wood on October 3, as reported in last week's issue, brief arguments, mostly in opposition to the plan, or to part of it, were presented on October 4 by representatives of several western state Commissions, shippers' organizations and short lines, although F. L. Shull, representing the Oregon commission, spoke in favor of the merger, saying it would enable the railroads to provide better service and reduce rates.

Opposition on the ground that it would restrict competition was presented by C. E. Childe, for the

Omaha Chamber of Commerce and the Nebraska commission; John Dunbar, attorney general of Washington; Neill Garrett of the Iowa commission; F. S. Keiser, of the Duluth Chamber of Commerce and K. K. Gartner, representing the Fargo Chamber of Commerce. C. A. Miller spoke for various connecting short lines that are not satisfied with the plan proposed by the northern lines, M. F. Joyce for the Minneapolis & St. Louis and R. M. Shaw for the Chicago Great Western.

F. H. Wood, in concluding his argument for the Milwaukee, said in part:

Merger Plan Declared Contrary to Public Interest

"It should be plain that the proposed merger does not meet either of the major requirements of the consolidation provisions, is inconsistent with both and will render the ultimate realization of the Congressional purpose impossible.

"Assuming that the economies proposed can be realized, the evidence shows that not more than one-half are dependent upon the merger.

"Assuming that no economies may be realized without the merger, however, the economies planned could never have any appreciable effect upon the rate structure. The total amount, \$10,000,000, is less than $\frac{1}{4}$ of 1 percent of the revenues of the western district and less than $1\frac{1}{2}$ percent of the revenues of the lines in the northwestern territory. Since the general level of rates is made with respect to the condition of the lines as a whole, it is therefore apparent that these savings could have no appreciable effect upon such general level. Voluntary rate reductions are made from motives of self-interest by reason of the belief that additional traffic can be secured and additional net earnings realized. These motives of self-interest operate quite independently of operating economies and will be as strong without the merger as with it. Furthermore, we have the declaration of the Northern Lines themselves that they do not intend to pass the economies on to the public through reduced rates. But however this may be, any assumed advantage the public might realize by reason of such economies cannot be weighed against the creation of a permanent situation repugnant to the public interest as defined in the consolidation provisions and rendering the ultimate realization of their purposes impossible.

"As a matter of law, the application should be denied by reason of the failure of the applicants to apply for authority to acquire control of the Burlington by the new company. Contrary to the contentions of the applicants, such control does not involve the continuation of an existing situation. For equal ownership by two independent and competing companies it substitutes complete ownership by a single and consolidated company. This is a change which requires the specific authority of the commission on an application specifically requesting it. No such application has been made, nor has any proof been offered that such a

change would be in the public interest. Mere proof that determination of the existing divided control would be harmful to the Northern Lines falls far short of being proof that complete control by the two combined would be in the public interest. No one in this case is proposing a dissolution of the present joint control. Evidence that its results would be harmful even if established is no evidence that single and complete control would be in the public interest.

"The St. Paul is not advocating a dissolution of the present community of interest in the ownership of the Burlington. If, however, the only solution which squares with the requirements of the Transportation Act calls for such dissolution, there is ample authority in Congress to accomplish such result. But in no event is the conclusion that the only other alternative is to permit the Northern Lines themselves to merge a sound one. There is another alternative equally easy of accomplishment. That is to let the situation remain as it is, and it is this and not dissolution of the present joint control of the Burlington which the St. Paul is advocating. The argument of the applicants in this regard amounts to but this: that because the Great Northern and Northern Pacific many years ago each elected to acquire a half interest in a railroad forming the natural eastern connection of each, they must now be permitted to consolidate that divided control into a single and undivided control and for that purpose themselves to consolidate irrespective of the effect of their consolidation—either upon competition, the realization of the policy of Congress in respect of consolidations, the requirements of the statute, defining the tests by which any proposed consolidations are to be judged, or of any interest save that of themselves and their stockholders. The earnestness and frequency with which this argument is made by the Northern Lines serves but to confirm the suspicion that the real purpose of this application is to convert their present divided control of the Burlington into a single and unified control and that but for this purpose they would not themselves be seeking to unite the two strongest railroads and the two most competing railroads in the Northwest, and thus bring about a situation so repugnant to the policy of the law as declared in the Transportation Act."

Mr. Hines in the concluding argument, said in part:

"To start with, the word 'gigantic' has been brought into the case very frequently, as if, by calling this thing gigantic, that wiped out of the case the questions of public interest that were involved. If this situation is gigantic, it has already existed, in very large part, for the past 27 years, promoting the interest of the public, and not injuring competition. I believe it is true—of course, the commission will reach their own conclusions on that—that the active competition between the two Northern companies during the past 27 years, when they jointly have owned the Burlington and jointly have developed the S. P. & S., has probably resulted in leaving less business for competitors than will be the case if the two Northern lines are combined."

"The Baltimore & Ohio at one time had reached a low ebb, and yet it built itself up, in the face of the Pennsylvania, which is the greatest giant that the country has had in its railroad history, and which is nearly twice as great as this gigantic institution which is held up to you now as being of such a character as to settle this case by itself.

"It is well to bear in mind, in connection with that, that the commission's powers to regulate railroad conduct now would protect a carrier with lesser strength

far better than could have been done in these old days about which I have been talking, when, without any public protection, and just by the inherent situation that seems to have characterized the railroad business in this country, once you get a system that is well located and put it on a sound financial basis, it develops, no matter how strong the competition is around it.

"I have pointed to these extreme cases; but we have no such extreme case here. Take the Milwaukee. Take the Union Pacific, with their present extent, and with their present command of traffic. They are in a vastly better position than the roads to which I have referred, but which, nevertheless, have built themselves up steadily and have become increasingly important factors in the transportation life of the country. So, I say that these hard words about the gigantic character of this situation threw no light whatever on the public interest that is involved.

"I think there is a fundamental distinction as between industries which are dealt with in these anti-trust cases and the railroads. A farther point is that throughout this matter the commission has its hand on the situation as the guardian of the public interest, and, with all these differences, these cases are not in point at all.

"All this talk about competition, it seems to me, really goes back to the old fashioned idea that you want all the competing railroads that are possible. That was the idea of the anti-trust act. It is not the idea of the Transportation Act.

Once you have enough strong railroads giving high class service in a community, or in a series of communities, to furnish the necessary stimulus to the best service, and the necessary stimulus to the readjustment of rates to develop the territory and satisfy the public interest, beyond that the multiplication of railroads is wasteful and contrary to the public interest. That is the principle of the Transportation Act. I have shown that, considered relatively to area, there is more competition, decidedly, in this northern area of states than elsewhere, and that the reduction by one, of the railroads in the United States, in this northern 400 miles, would be decidedly in the public interest."

Commissioner Farrell remarked that there had been some discussion that the thought would not help the commission very much. "For instance, Congress had to do several things when it gave the commission authority to pass upon an issue of this kind," he said. "That is to say, I think that section 5, which deals with consolidation, must be read together—that is, all parts of it must be read together—in determining how to administer any part of it. I understand that the principal reason advanced by these Northern lines for approval of this application is that it will enable them to save about \$10,000,000 that they could not otherwise save. I can see that part of it very readily."

"But Congress had in view, also, the preservation, in the public interest, of the weaker lines which, without the assistance and cooperation of the trunk lines, are unable to continue operation. It had also in mind, as was stated by Mr. Wood, the formation of systems which would be about equal in strength and in cost of operation per unit of traffic transported. It had further in mind the preservation, in so far as it might be possible in a transaction of this kind, of the existing routes and channels of trade and commerce. However, there is one point that has been very troublesome, I think, in the past, in these cases. They have come in here piecemeal. A scheme with reference to a par-

ticular part of this country has not been presented at one time to the commission, and the commission has been compelled, according to my view—and I am speaking only for myself—to act the part that has been described as obstructive, instead of being of assistance. I conceive the idea that the Interstate Commerce Commission, without the assistance of the carriers as such, and other people interested in this problem of consolidation, or control by one line of another, and so forth, as taken care of or provided for under Section 5, is unable to do anything definite. How can we decide the question of whether a particular short line should be connected with a combination we are asked to approve unless somebody brings that short line before the commission. Is the commission to go out into the field and search for these problems and bring them in itself? What is your view about a matter of that kind?"

Mr. Hines replied: "As to this matter of equal strength, let me say that I do not believe the statute contemplates systems of equal size. It does contemplate that when you come to a general consolidation plan the matter of relative rate return is important, but it leaves the commission absolutely free to have some systems larger than others, and I think Congress deliberately omitted to say that they should be of equal size, realizing how impracticable that would be. I think the tentative plan that was worked up to serve as a basis for discussion shows, by the tremendous disparity in size, that that was not a thing that the Commission then contemplated was called for by the law.

"Coming to this short line situation, I want to say that in this case I believe we have done more, voluntarily, at the outset of the case, to aid the commission, than has come to my attention in other cases. We made an analysis of all the short lines in our territory. We gave the facts about every one of them. We took the initiative and brought all that material before the commission for its information. Then, acting on our own judgment, as we had to do, to present the matter, we classified those lines and showed which, on the facts as we understood them, would not be of concern here. We showed others that we thought would be, and then we made offers as to those we thought would be of concern to the commission.

"The suggestion has been made here 'Why do anything now? Why take the responsibility of making a decision, about this? Wait and see what may develop later.'

"I think that would be a most unfortunate way to deal with this case. The commission has this record. The parties have been before it. They have shown their contentions. I believe we have met them. We have shown the great public benefits, and we think that the case is one which the commission can now decide. As Mr. Lyons has pointed out, If the commission sees fit it can impose the condition, as it did in the Southern Pacific-Central Pacific case, that in the event of a general unification plan, if this is found to be inconsistent with it, this plan may be modified to the necessary extent. In that way I believe the commission would have a practical opportunity to deal with it in the light of anything it might eventually decide should be done in connection with general consolidations.

"If this is denied, further progress will naturally be very greatly delayed. Here is a great opportunity to do a constructive thing in the public interest and in the promotion of the government's policy. While others have tried to discourage the taking of action

now, for the reasons I have mentioned, I think the time and the record are ripe to admit of such action being taken. The opportunity is present, and the public benefits are great, without substantial injury in any direction; on the contrary, any alternative solution would be unwise and injurious; and furthermore, would be impracticable in any voluntary method of railroad combination."

Claim Prevention and Freight Car Repairs*

By Joe Marshall

Special Representative, American Railway Association, Chicago

THE freight train car repair bill of the carriers last year was \$340,628,364. The loss and damage bill was \$38,713,089, of this sum \$18,302,676 is chargeable to unlocated damage and rough handling. It has been estimated that at least three per cent of the freight-train car repair bill is caused by excess speed at time of impact and rough handling. If this is a fact, we can set down \$10,200,000, add it to the \$18,302,676 damage bill and have 29 million dollars to shoot at in anything the car man can do to prevent the things that lead to so-called rough handling.

This sum is about ten million dollars greater than either of the following items:

Passenger train car retirements
Passenger train car depreciation
Work train equipment repairs

It equals two-thirds of the total supervision expense in the maintenance of equipment account of the carriers and it is more than three times the total maintenance of equipment expense of Class I switching and terminal companies.

The subject is important for car men because, with lighter handling of cars, we can perhaps build lighter cars instead of continuing to build heavier cars to receive heavier handling. We can thus contract a vicious circle.

I saw some figures several years ago indicating that 47.2 per cent of car repairs was due to running, time, and the elements, and that 52.8 per cent was due to starting, stopping, switching, loading and unloading, so we have at least 50 per cent of the freight train car repair bill to work on.

Interstate Commerce Commission Accident Bulletin 96 for 1927 shows \$7,920,966 as the property damage caused by accidents resulting from defects in, or failure of equipment and \$6,801,636 charged to derailments due to defects in, or failure of equipment.

The table gives the equipment parts involved in failures causing accidents, and accidents due to loads.

Accidents Caused by Equipment Failures and Accidents Attributable to Loads

Wheels and axles	2,130
Trucks	1,512
Car bodies	1,041
Hand brakes, rigging, etc.	633
Draft rigging	630
Couplers	468
Power brakes	457
Locomotive parts	544
Locomotive boiler	3
A total of 7,418 accidents.	
Unequal distribution of load	104
Shifting of load	89
Load falling on track	43
Overloaded	13
Other	8

* Abstract of a paper presented at the convention of the Master Car Builders' and Supervisors' Association, St. Louis, Mo., September 11 to 13, 1928.

Last year the loss and damage account increased \$525,747, or 1.4 per cent. This was the first substantial increase in this account over a period of six years, during which time over 60 million dollars was taken off the account and during which time railroad ton-miles increased 134 billion.

At the end of May, 1928, the figures indicate a reduction of \$799,330, or 2.1 per cent for the twelve months ending May 31, 1928. Therefore, we have promise of a reduction for 1928 which may not only again balance the 1927 increase but probably give us a new low on loss and damage.

It is important to know, however, that for the 12 months ending May 31, 1928, the unlocated damage and rough handling items show an increase of 3.2 per cent, and concealed damage an increase of 10.8 per cent. So we again see that the loss items are bearing the burden of the decrease in the total account. Unlocated loss showing a reduction of 12.6 per cent; robbery 12.1 per cent, and delay 14 per cent.

We must turn our thoughts to damage. It is still about 30 per cent under 1921 and will probably never again reach that peak, but it requires more attention to hold it in check. Unlocated damage and rough handling are the high spots, over 70 per cent of which applies to car-load freight. I take these two items together because, while different, they are closely related.

Since 1921, carloading of agricultural products increased 4.7 per cent, but the miscellaneous and manufactures increased 39 per cent. Carloads of machinery and agricultural implements and machines alone increased 30 per cent, or 136,051 cars.

The damage money alone from unlocated damage, rough handling, improper loading and concealed damage, divides as follows:

Agricultural products	24 per cent
Manufactures and miscellaneous	34 per cent
Less car load	30 per cent

Less car load is 26 per cent of the total car loading of the country.

We had 2,527,055 claims presented last year. I have tried to apply these claims to our traffic by using individual line proportions. Here is how they fall.

Agricultural products	21 per cent
Animal products	3 per cent
Products of mines	4 per cent
Manufactures and miscellaneous	18 per cent
Merchandise	53 per cent

Of these claims 884,469 apply to car load damage on 21 million cars of claim-producing traffic out of a total loading of 53 million cars. In other words over 70 per cent of our loss and damage applies to 35 per cent of the claims received and about 34 per cent of the cars loaded. About twenty cars are loaded and hauled before one damage claim is produced. Wrecks were responsible for \$2,603,309, or 6.7 per cent of the total.

Principal Groups of Claims Resulting from Wrecks	
	Per cent
Coal and coke	12.7
Petroleum	8.0
Fresh fruits and vegetables	7.8
Live stock	7.5
Meat	6.0
Autos	5.7
Machinery	5.4
Grain	4.8
Iron and steel	3.3
Lumber	2.9
Vegetable oils	2.2
Flour	1.9
Other products mines	1.8
All other commodities	30.0

Contemplation of this list will indicate that wrecks, or derailments do not in themselves cause loss or damage, but that the bulk of it is the result of the difficulty of safely salvaging certain commodities after they become spread over the right of way, plus failure to have at hand tools, appliances and protective covering for handling and

protecting other classes of commodities. So, wreck loss and damage is largely due to failures after the wreck has occurred.

Recently some steel plates were involved in an accident. The wreck masters wanted to throw one of the cars over the bank but was prevailed upon to pick it up under load. One car was upset and the plates picked up with chains, causing some damage. In this case no damage would have resulted if the wrecker had been equipped with clamps or hooks, such as steel mills use to prevent damage to edges of steel plates while handling them.

Equip your wreckers with the necessary tools to handle the different kinds of commodities and you will contribute large savings in this item.

Among claim causes, defective equipment amounts to \$2,991,527 for the twelve months ending May 31, 1928, which is running neck and neck with last year. The relationship of commodities in this account are nearly the same as last year, as follows:

Coal and coke	25 per cent
Grain	23 per cent
Flour and mill products	12 per cent
Fresh fruits and vegetables	5 per cent
Sugar	4 per cent
Lumber	3 per cent

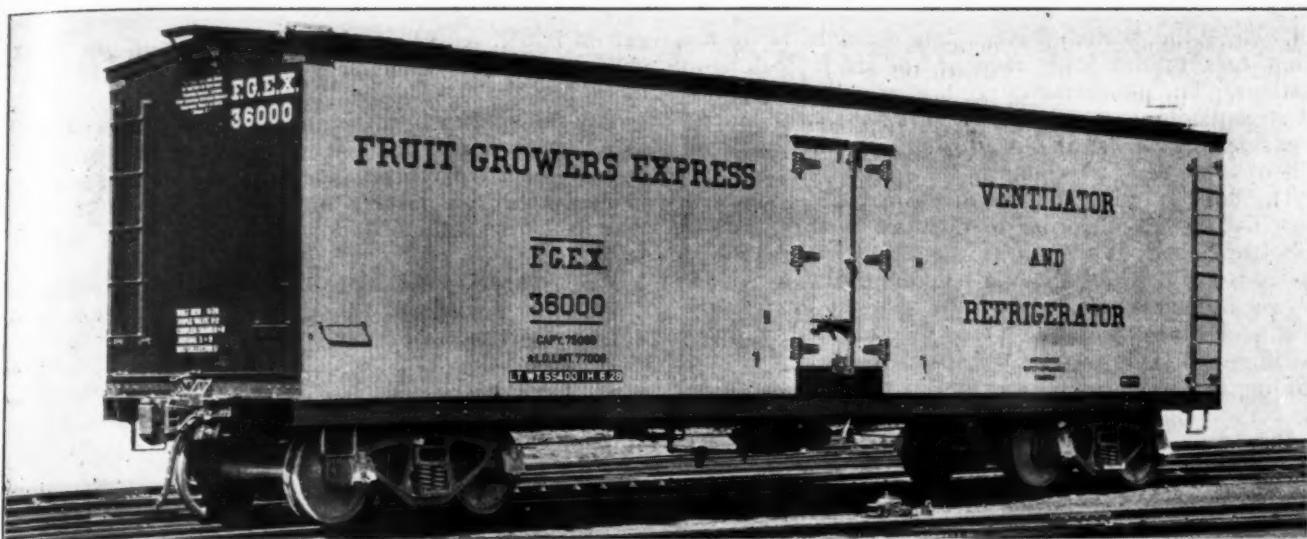
We have discussed this item in previous meetings. The usual and customary methods of control are being followed. In the last year or so, roads have made some changes in hopper door locks and have been working closely with the mines, and we think we hear much less about hopper doors opening under load.

The improvement since 1921 has been steady; grain losses reducing 72 per cent; flour and mill products, 72 per cent, and coal, 61 per cent,—this in the face of the following increase in car loading since January, 1921: coal 16 per cent, coke 72 per cent, grain and flour 4 per cent. Another way to show the continuous improvement is to say that the money charged to this account each month has been less than the same month in the previous year, and this has been true for nearly every month, January, 1921, to the end of May, 1928. In other words, in 71 out of 89 months, the figure for every month was less than for the same month of the previous year.

I need not dwell long on delay, certain phases of which were covered in some of your previous meetings. It cost the railroads last year \$3,518,613. Fresh fruits and vegetables took 67 per cent of this; livestock, 14 per cent, and grain, 6 per cent. In view of the 67 per cent taken up by the refrigerator car traffic, you can see the money saving possibilities here in any activity which will insure that these cars keep moving.

While on the delay question I might mention a loss and damage prevention report made to the last meeting of the American Association of Railroad Superintendents, one item of which dealt with so-called super-inspection, as practiced by one eastern road. This super-inspection involves every phase of equipment and working parts. It contemplates such inspection, adjustment and preparation, that equipment will travel the greatest possible distance without further attention. The employee doing the job initials his work, and failures can thus be checked back to the person responsible. This is similar to the so-called A.B.C. inspection plan followed by one or more western roads, under which a train is blue-flagged at both ends, the A repairs constituting tinker repairs, the B repairs covering detection of new defects, and the C repairs being final inspection on air connections, draft gears, journals and trucks.

Any inspection that will forestall failures enroute, hot boxes, rough handling and delays, will help reduce the loss and damage account.



Refrigerator Car Built by the Fruit Growers Express Company

Refrigerator Cars for the Fruit Growers Express Company

Equipped with basket bunkers, permanent floor racks, depressed floor pans and waterproof floors

THE efficiency of a refrigerator car is determined, in the main, by its ability to maintain temperatures on the inside of the car well below outside temperatures when refrigeration or ventilation service is used and above the freezing point when insulation or heater service is desired. Refrigeration is effected by the circulation of air; the warm air from the commodity rises to the ceiling, passes through the ice in the ice bunkers, thence passing out through the bottom bunker openings into the body of the car, diffusing through the load, absorbing heat from and reducing the temperature of the commodity. Successful refrigeration or other protective service cannot be obtained unless the commodity loaded in the car is properly packed and stowed so as to provide channels for the circulation of air through and around the lading. Proper loading and packing is of the utmost importance and has been covered by detailed instructions issued by the railroads and given careful attention, both by the railroads and shippers.

Progressive Advance in Efficiency

The advance in the construction and resultant efficiency of refrigerator cars has been progressive since the benefits of its use were first established and the cars in general use today reflect the developments in the art. They do not vary greatly in dimensions and loading space, which is beneficial both to carriers and shippers. They are generally heavily insulated, to accelerate refrigeration and furnish adequate protection against cold. Basket type bunkers and permanent floor racks are coming into general use.

The practice of body icing has grown up recently and is increasing, particularly in connection with some green

vegetables which the shipper desires to keep moist. Under this practice, ice in quantities from one to as much as 12 tons, is placed in the body of the car and all the water produced by the melting of the ice is deposited on the car floor. One ton of ice will release sufficient water to cover the entire floor more than $1\frac{1}{2}$ in. deep. This requires some form of waterproofing and the bunker tank also needs to be depressed so that the water in the body of the car will run into these pans at the ends of the car and thence to the car drains.

The Fruit Growers Express Refrigerator Cars

The Fruit Growers Express Company is constructing at its Indiana Harbor shop, new refrigerator cars of its standard design, which embody interesting features in the design and construction of refrigerator cars for the transportation of perishable freight, such as bananas, berries, citrus fruits, peaches, other fruits and vegetables of all kinds, packing house products, dressed poultry, eggs, etc. These cars are insulated with high-grade insulation, 3 in. thick in the roof, 2 in. in the side and end walls and $2\frac{1}{2}$ in. in the floor, and are built with depressed floor pans, waterproof floors and floor insulation, and permanent floor racks. The principal dimensions and weights are as follows:

Length between bulkheads	33 ft. 2 $\frac{3}{4}$ in.
Width inside	8 ft. 4 in.
Width over side sills	9 ft. 2 $\frac{3}{4}$ in.
Height from top of floor to ceiling	7 ft. 8 in.
Capacity of trucks	80,000 lb.
Capacity of ice tanks	9,600 lb.

The Underframe

The underframe is of the box girder type, consisting of two 15-in. by 50-lb. channels, spaced 12 $\frac{1}{2}$ in. back to back with top and bottom 21-in. by $\frac{1}{2}$ -in. cover plates. The top cover plate runs continuous from end sill to end

sill, while the bottom cover plate extends from the front face to the front face of the draft back stop castings. The underframes are braced with deep pressed steel diaphragms as well as corner diagonal braces. The side sills consist of 8-in., 13.75-lb. channels and end sills of 8-in., 21.25-lb. channels.

The floor framing consists of deep wood sills rather than nailing sills in order to facilitate repairs. These sills are bolted to the underframe and are gained at the ends for depressed ice pans. One course of square edge sub-floor is applied over the sills cut to clear the post and brace castings. Over the sub-floor a single thickness of $\frac{1}{2}$ -in. board-form insulation is applied, extending full width of the car and in four lengths to reduce the number of joints to a minimum.

Insulation spreaders are then applied, which are spaced over the sills as backing strips for the floor proper so as to provide a rigid floor. One course of



The Underframe and Floor Construction

$1\frac{1}{2}$ -in. thick soft insulation is applied between the stringers, and is held in place by cleating to the sub-floor and stringers. The side pieces are of sufficient width to insure a seal when the side wall insulation is applied. One course of $\frac{1}{2}$ -in. board-form insulation is then applied over the floor stringers, which provides a $\frac{1}{2}$ -in. air space between the $1\frac{1}{2}$ -in. thick insulation and the $\frac{1}{2}$ -in. board-form insulation.

Waterproofing

A heavy coat of waterproofing compound, mopped over the top course of board-form insulation, seals the joints. While this waterproofing is still hot, a layer of waterproofed duck, 12 in. wide, is applied along the side and end sills of the car. The waterproof duck is arranged so that 6 in. of it may be bent upwards under the lining boards to provide a watertight joint.

The top floor consists of $5\frac{1}{4}$ -in by $1\frac{1}{4}$ -in. tongue and groove flooring and is nailed to the sills of the car through the floor stringers. All the tongues and grooves are painted with a sealing cement. It will be noted that the insulation and flooring extend over the framing.

The surface of the floor is waterproofed, and it is depressed at the ice bunker, so that any water which may

get on it will tend to find its way to one or the other ends of the car when on grades while the car is in motion.

The side and end wall framing consists of wood sills, plates, posts, braces and belt rails, applied in accordance with the usual practice. The posts and braces are set in malleable iron pockets and caps. All side and end wall insulation is applied outside of the framing in mass form.

Wide sheets of board-form insulation, extending from gains in the sills to gains in the plates, are then applied over the entire car framing. Belt rails are applied over the face of the board-form insulation providing three equally spaced sections for insulation. The three panels are then insulated with $1\frac{1}{2}$ in. of insulation, securely cleated to the belt rails, posts, sills and the plates forming the panels.

Roof Construction

One course of $\frac{1}{2}$ -in. board-form insulation, applied under the carlines with joints at every other carline, forms the support for the intermediate roof insulation. When the under course of insulation has been applied, the ceiling is applied; the ceiling is securely nailed to all carlines to eliminate sagging.

One 2-in. thickness of soft insulation is then applied between the carlines of such a width and length as to require forcing in place, and thus assuring tight joints. Over this, one course of $\frac{1}{2}$ -in. board-form insulation is applied, which is also forced into place.

A heavy coat of waterproofing compound is applied over the entire roof insulation. As a further precaution to keep the roof insulation dry, the carlines have been provided with four $1\frac{1}{4}$ -in. diameter holes with a like number through the end plates and end sheathing, thus permitting the circulation of air for ventilation purposes between the roof of the car and the roof insulation.

Two courses of board roof are applied with a layer of three-ply composition roofing, lapped along the ridge separating them. Before the composition roofing is applied, the lower course of board roofing is given a heavy coat of waterproofing compound, so as to fill all roof board joints, crevices, etc. An additional course of 12-in. wide heavy composition roofing is applied along the entire ridge under the running board saddles in order to seal the roof board joints along the ridge.

Ice Bunkers

The ice chambers are of the full basket type of 9,600 lb. ice capacity. The bulkheads are of the insulated type, having $12\frac{1}{2}$ -in. bottom and 12-in. top openings and have rolled steel I-beam posts with wood side pieces. Ice pans of depressed type are made of 12-gage galvanized steel with water traps of the inside type.

The Doors

The doors are constructed in a similar manner to the side walls of the car with 2 in. of massed insulation over the frame. The Miner type of door locking devices and LaFlare door packing are used. The car proper is provided with a wood threshold block instead of the customary steel plate as a protection against frost. Bolts passing through the door are counter-sunk also as a precaution against frost.

Weather strips made from double thicknesses of canvas applied around a strand of $\frac{1}{4}$ -in. rope, are applied at the bottom inside face of the doors for contact against a metal plate seated in the car floor when the doors are closed.

National Safety Congress Meets at New York City

One hundred per cent safety in yard work—Varying views on the crossing whistle

THE Steam Railroad Section of the National Safety Council, meeting in New York in connection with other sections of the council, held sessions at the Waldorf-Astoria hotel on Tuesday, Wednesday and Thursday, October 2, 3 and 4, President E. R. Cott (Hocking Valley) in the chair and Secretary C. F. Larson (Missouri Pacific) acting as secretary of the meeting. The meetings of the section were largely attended, about 400 being present on Tuesday and Wednesday.

The president of the Council for the ensuing year is Major Henry A. Reninger, Allentown, Pa. and the chairman of the Steam Railroad Section, elected at this meeting, is J. E. Long, (Delaware & Hudson), Albany, N. Y.; vice chairman, C. F. Larson, (Missouri Pacific) St. Louis, Mo.; secretary, A. W. Smallen (C. M. St. P. & P.) Chicago.

The principal subjects which are of particular interest to the readers of the *Railway Age* dealt with at these meetings were: safety in yards with a paper by J. H. Spooner; the use of the locomotive whistle as a highway crossing signal with a paper by J. A. Carney (C. B. & Q.) and safety contests, with a paper by L. G. Bentley. Another paper which should be included under the head of safety in yards, was one by H. M. Mayo on how many men should be allowed on the footboards of switching engines.

Safety in the yard was the title of Mr. Spooner's paper. He is terminal trainmaster of the Ohio Central Lines of the New York Central at Toledo, Ohio. The Ohio Central yards at Toledo handled, in 1927, a total of 1,514,380 cars and the number of cars handled daily runs from 4000 to 6000. Including transfer service, switch engines total 50 to 60 eight-hour tricks daily. There is a coal dumping machine which dumps 600 cars daily and 25 per cent of the total cars consists of coal, each car of which is handled two to four times.

Mr. Spooner, like other chairmen of safety committees, finds one of his chief problems that of inspiring the employees with such confidence that they will report infractions of rules. "It is almost unbelievable, to one not familiar with the facts, the extent railroad employees are criticised by their fellow-employees for reporting infractions of safety rules; however, I am glad to say the officers of the brotherhoods are helping me in every possible way to break up this feeling. . . . Too many men when appointed on the safety committee get the idea that their job is to find all the unsafe conditions that exist without giving much thought to the unsafe practices."

Another difficulty is that a man reports an unsafe practice to the committee when what he ought to have done was to correct it at once himself. The rule forbidding men to board the front foot-board when the engine is in motion, has been a difficult one to establish, but good progress has been made. The rule at Toledo is that their job is to find all the unsafe conditions that and then only on a switching lead.

The rule that an engine must not foul a switch before

the route is set up, is a difficult one but in this also, compliance has been secured with few exceptions. Officers do not agree as to applying discipline to enforce safety but Mr. Spooner holds that if a man has been cautioned about a particular violation by his superior officer and fails to heed the warning, he should be impressed in some forcible way that he must not repeat that violation; and if that fails to bring results, he should be dismissed.

Switchmen and others should be taught to take a personal interest in a clean yard; do not leave everything to be picked up by the trackmen. In yards where engines are working at both ends, a conductor pushing in cars must leave a clear space the length of two cars. Constant watch must be kept to convert the men who think the officers of the road impose safety rules from a selfish standpoint. Fortunately, these men are becoming fewer.

It is important that the supervising officer search his own conscience to make sure that he has "sold" himself on safety. Only by energetic action in this line can he keep himself up to the duty of talking to the men at every opportunity. Safety must be made one of the officer's paramount duties. The transportation department in the Toledo yards, which has 450 employees, has not had a reportable personal injury since February 8.

The Whistle and the Highway Crossing

Mr. Carney recounted the experience of the Burlington with the rule requiring the last of the four blasts of the signal to be continued until the locomotive shall have passed over the crossing. This rule has been in effect since August, 1926, and the Burlington is convinced that it is a good rule. The discussion on the paper brought out varied views as to when the whistle signal should be begun and just what is meant when we speak of the locomotive having passed the crossing. Emphasis was put upon the fact that the last second before the engine strikes the crossing may be the time when the whistle saves a life. The Missouri-Kansas-Texas, the Atlantic Coast Line and the Erie, according to their respective spokesmen, agree, in general, in approving the lengthening of the signal until the crossing is reached.

Full 100 per cent compliance with the rule by all enginemen was not claimed by any speaker. Enginemen exercise their discretion in various ways. In Illinois, the law requiring the sound of the signal to be continued throughout a quarter-mile, is by no means generally carried out; on trains moving at low speed, the enginemen largely use their own judgment. In Missouri, the law says that the whistle *or* the bell must be started at the whistling post and the practice is to start the bell alone, and then to start the whistle according to conditions.

D. G. Phillips (Wabash) offered the suggestion that the whistle signal ought to be measured by a period of time instead of by distance; to begin nine seconds before the train reaches the crossing he considers a reasonable rule.

Speakers from western roads were substantially unanimous in approving the long drawn-out whistle, though one prominent representative spoke in approval of the

A. R. A. rule which leaves it discretionary with each road to lengthen the signal or (without lengthening) to repeat it; or, indeed, "to omit or modify the rule to meet its own requirements." One Eastern road, the Lehigh Valley, has however, adopted the same rule as the Burlington's and is satisfied therewith.

An engineman of the Union Pacific, called upon for his views, said the rules were all right, but the long drawn-out whistle did not cover the whole case. He had called careless drivers to their senses by short blasts of the whistle. This engineman reminded the safety specialists that the interest of the careless motorman was not the only point at issue; think of the engineman, who has to sit behind this whistling all day.

B. F. Kelly, trainmaster of the Staten Island lines of the Baltimore & Ohio, (New York City) was not friendly to the long drawn-out blasts. On his road, the standard signal—two long, two short—is repeated, and if necessary is repeated a second time. Mr. Kelly, whose duty is to check the practice of the enginemans in this feature of their work, regards this practice as very satisfactory. The use of long blasts would undoubtedly in his territory arouse severe criticism on the part of the people living adjacent to the railroad. The rule providing for repeating the signal instead of lengthening it, affords a simple means of adjusting the practice to any speed of train from the highest to the lowest.

The Front Footboard

This is the subject of the paper by H. M. Mayo, who is superintendent of safety, Southern Pacific, Houston, Texas. The paper was read by the secretary. On the Southern Pacific, says Mr. Mayo, there is no front footboard; that is to say, the front footboard is that board which leads in the direction in which the locomotive is moving, and employees are prohibited from riding on this board under penalty of severe discipline. This rule was established in January, 1920, and practically all opposition has been overcome. A recent questionnaire brought out the fact that the superintendents were unanimous in their objection to any change. It was also the unanimous opinion that the rule does not interfere with celerity of movement in the yards. During the eight years and nine months that the prohibition has been in effect, there have been two accidents; in one case, an engine ran over a derail, smashing the board and seriously injuring an employee; and in the other case a yard man fell off the front footboard while mounting. In both cases, these men violated the rule. What might have happened without the rule is significantly suggested by the fact that there have been a number of derailments of switching engines in the yards.

At Houston, San Antonio and El Paso, when a switch engine passes through the station close to a passenger train, or on tracks over which passengers must walk, one switchman may ride on the leading footboard, with the purpose of better controlling the movement of the engine in case a passenger becomes confused. Recounting the process of education which had been necessary to accomplish this reform, Mr. Mayo said that in several instances employees, after being repeatedly cautioned, had been dismissed.

In the discussion of this paper, there was very general advocacy of the rule forbidding men to ride on the front footboard, but there were varied views as to certain exceptions. It is desirable to have only one man on the footboard at any time; the safe place to ride is at the end, outside the track rail; in numerous places in yards, a man on the footboard on the engineman's side can be of use as a look-out. Constant supervision is necessary

for men are constantly trying to save time. In warm weather, sometimes men ride in front simply to get the cool breeze. The brakeman should always step off the board before making a coupling.

Safety Contests

L. G. Bentley explained at some length the value of well organized contests in minimizing accidents, giving some of the lessons of his experience. Contests "must be an institution and not an incident—not flashes but a strong enduring light." To be effective they must be planned on a departmental basis. They stimulate both officers and employees. Officers and foremen will be spurred to see that injured men get back to work as soon as possible. Mr. Bentley stressed the importance of the interest of higher railway officers in safety work. Trophies are necessary and important in connection with safety contests, but the ultimate aim of the safety officer must be make the love of achievement the greater trophy.

In the discussion on Mr. Bentley's paper, emphasis was laid on the importance of studying all injuries where time is lost; confining attention to cases reported to the Interstate Commerce Commission leaves important lessons neglected. Every hour that a man is off duty because of an injury is logically a basis for a mark against the record of the foreman.

Other Papers

Safety at the freight house was the subject of a paper by J. E. Long, (D. & H.) who stressed the need of widespread education. The discussion on this paper was participated in mainly by members from large cities. These men have to deal largely with "floaters," men who work only a week or two and then leave, a condition which makes discipline exceedingly difficult. The safety specialist can there do little except with the foremen or supervisors. Where work is done by contract, additional difficulties come in.

Safety in the shop was the subject of a paper by W. P. Mountford, (Penn.). The shop foreman has all of his men under his immediate eye and ought to make a record for safety better than that of any other department. From the safety specialist's standpoint, the foreman is the main objective. Wrong practices demanding correction should not be left to be attended to after reading a monthly report; the correction should be made as soon as possible.

In the discussion on this paper, attention was directed to what are called repeaters; meaning men who make a good many blunders. Careful study of records will show, for example, a certain engineman will have five highway crossing casualties on his record within five years whereas a certain other engineman will have none; one employee will do thousands of dollars of damage in five years while others will have a clear record. J. L. Walsh (M-K-T) said that careful study of records in this way had enabled superintendents to talk to individual employees and get them to reform their behavior. It is the duty of every superintendent and master mechanic to keep informed on this feature of the accident record. "Repeaters" will be found among enginemans, brakemen, track foremen and others.

Safety on the Roadway. W. L. Roller (H. V.) read a paper on safety in the maintenance of way department. He emphasized the importance of giving attention to the mental and moral fitness of employees. The frame of mind of a worker, his enthusiasm for his work, his confidence in his superior officers and his loyalty have a direct bearing on his record for safety. Pursuit of the

ideal in safety means the cultivation of unselfishness, and the safety committee is an important means of promoting good relations between officer or foreman and employee. Unselfishness on the part of the employer implies promotion of good housing, elimination of seasonal employment, encouragement of the young men's movement and other social details.

Track motor cars, their use, care and operation, was the subject of a long and carefully prepared paper by S. H. Osborne, engineer of maintenance of way, on the Union Pacific (Omaha, Neb.). There are in use on American railroads more than 55,000 track motor cars representing an investment of over \$12,000,000. The primary use of the car is to carry men and tools to and from their work, but its functions have been expanded until the cars are very useful in mowing, burning weeds, dressing gravel, etc.; and the motor on the car is being used for tie tampers, rail saws, drills and other machines. The track motor car often saves large sums by making a work train unnecessary.

Mr. Osborne went into the question of operating and caring for track cars in great detail.

Dr. Arthur Geiringer, associate medical director of the Equitable Life Assurance Society, New York City, presented a paper on preservation of health, setting forth the very substantial benefits of periodical examinations of employees.

The convention listened to a paper by J. Wiley, a Pullman porter and Hugh C. Cole, a brakeman of the Missouri-Kansas-Texas, both of whom spoke on safety from the standpoint of their everyday work. Girard C. Varnum, secretary of the St. Louis safety council made a brief address in which he called upon the railroads to definitely affiliate, everywhere, with local sections of the National Safety Council.

On Thursday morning, the program was suspended for a half-hour while the Section listened to E. A. Sperry, of Brooklyn, N. Y., inventor of the machine and process for detecting transverse fissures in rails, who gave an account of his studies. The car which has been fitted with apparatus to put this invention in use and which is owned and operated by the American Railway Association is to be put in service on the New York Central in the immediate future.

Railway Employment Stability Study

Bureau of Labor Statistics analyzes regularity of work enjoyed by six classes of employees

RESULTS of a study, made by the Bureau of Labor Statistics, on the stability of employment enjoyed by six classes of railway workers, on representative roads in different sections of the country, were published in the August Labor Review of the Department of Labor. The occupations selected for the study were: Clerks (class B), section laborers, machinists, telegraphers, road freight firemen and yard brakemen. The years 1922 to 1927, inclusive, were taken except in the case of machinists where 1922 was

for all Class 1 roads would be misleading because employees are being laid off in one section of the country at the same time additional men are being taken on in another.

The stability of employment is measured by relating the average monthly employment during the year to the

Table 2.—Per Cent of Full-Time Employment for Clerks by Roads and Years

District and Railroad	Clerks	Te- leg- raphers	Section Labor- ers	Ma- chin- ists	Road Fire- Brake- men	Freight men	Yard men	1922	1923	1924	1925	1926	1927	
<i>Northeastern district:</i>														
New York Central	87.3	98.3	83.4	91.9	83.3	94.9								
Pennsylvania	93.8	93.2	84.7	87.8	85.7	90.2								
Baltimore & Ohio	97.8	97.5	82.9	94.2	92.7	94.9								
<i>Southeastern district:</i>														
Southern	98.1	97.3	91.3	95.8	91.1	94.3								
Louisville & Nashville	98.5	95.7	92.6	97.2	92.5	92.4								
<i>Northwestern district:</i>														
Chicago, Milwaukee, St. Paul & Pacific	96.3	96.7	68.5	95.6	90.5	96.3								
Great Northern	93.6	89.1	66.8	98.4	72.9	77.9								
Chicago, Burlington & Quincy	97.5	97.4	77.6	96.8	88.5	91.4								
<i>Southwestern district:</i>														
Atchison, Topeka & Santa Fe	98.7	97.3	82.3	98.2	78.8	92.9								
Southern Pacific	95.8	94.6	87.5	95.5	88.3	89.3								
Average, all 10 roads	95.7	95.7	81.8	95.1	86.4	91.4								
Number of roads with 97.5 per cent or over					2	3	2	5	6	5				

omitted because it was the year of the strike. It was pointed out that the study necessarily dealt with individual occupations on individual railroads and that combined data were not included because the total number of employees on a particular road may be substantially uniform from month to month while, at the same time, there may be wide fluctuations in the number employed by that road for different types of work. In this connection the study also indicates that there is practically no transfer of employees between departments. Likewise, it further states that monthly figures

number of employees or full time positions in the month of maximum employment. For example, if a particular occupation had a monthly average of 80 employees and the maximum number for this occupation in any month was 100, the stability of employment, according to the foregoing method, would be 80 per cent. Basic data were obtained from files of the Interstate Commerce Commission. Railways selected were: The New York Central, Pennsylvania, and Baltimore & Ohio for the eastern district; the Southern and Louisville & Nashville for the southeastern district; the Chicago, Milwaukee, St. Paul & Pacific, Great Northern and Chicago, Burlington & Quincy for the northwestern district; the Atchison, Topeka & Santa Fe and Southern Pacific for the southwestern district.

Results of the survey indicate that, during 1927, clerks and telegraphers enjoyed the greatest stability of employment, with an average percentage of 95.7, and the machinists were next with a percentage of 95.1. Yard brakemen were third with 91.4 per cent, while

Table 3.—Per Cent of Full-Time Employment for Machinists, by Roads and Years

District and Railroad	1923	1924	1925	1926	1927
Northeastern district:					
New York Central	91.5	86.8	93.4	95.9	91.9
Pennsylvania	95.3	88.3	93.0	93.4	87.8
Baltimore & Ohio	92.7	90.1	96.8	92.8	94.2
Southeastern district:					
Southern	95.4	90.6	93.6	98.4	95.8
Louisville & Nashville	96.3	90.0	98.3	98.5	97.2
Northwestern district:					
Chicago, Milwaukee, St. Paul & Pacific	87.9	91.6	95.4	95.5	95.6
Great Northern	87.7	96.9	97.2	98.5	98.4
Chicago, Burlington & Quincy	89.9	82.3	88.5	96.9	96.8
Southwestern district:					
Atchison, Topeka & Santa Fe	96.4	92.4	90.0	94.6	98.2
Southern Pacific	91.7	82.3	93.8	92.8	95.5
Number of roads with 95 per cent or over	4	1	4	6	7

road freight firemen and section laborers enjoyed respectively but 86.4 per cent, and 81.8 per cent, employment stability. Among the individual roads of the sample groups selected the Southern and Louisville &

Table 4.—Per Cent of Full-Time Employment for Road Freight Firemen, by Roads and Years

District and Railroad	1922	1923	1924	1925	1926	1927
Northeastern district:						
New York Central	65.8	86.7	89.5	82.7	91.2	83.3
Pennsylvania	84.2	96.2	90.1	91.5	89.9	85.7
Baltimore & Ohio	80.8	92.7	85.1	88.9	90.4	92.7
Southeastern district:						
Southern	79.8	89.9	94.1	92.3	93.2	91.1
Louisville & Nashville	89.2	87.5	85.0	88.5	89.3	92.5
Northwestern district:						
Chicago, Milwaukee, St. Paul & Pacific	93.4	89.4	91.1	91.0	90.7	90.5
Great Northern	76.1	84.9	77.2	80.0	79.8	72.9
Chicago, Burlington & Quincy	78.6	89.8	83.8	85.4	90.1	88.5
Southwestern district:						
Atchison, Topeka & Santa Fe	73.5	89.5	82.4	76.5	77.0	78.8
Southern Pacific	83.5	86.9	87.9	80.1	85.2	88.3
Number of roads with 90 per cent or over	1	2	3	3	5	4

Nashville stand out with a 1927 employment stability of over 90 per cent for each of the six classes of workers. In all occupations, except that of section laborers, the Baltimore & Ohio and the Chicago, Milwaukee, St. Paul & Pacific also show a percentage above 90. Figures are shown in Table 1.

When the trend of employment is considered it is

Table 5.—Per Cent of Full-Time Employment for Telegraphers, by Roads and Years

District and Railroad	1922	1923	1924	1925	1926	1927
Northeastern district:						
New York Central	94.0	98.9	95.7	96.5	99.2	98.3
Pennsylvania	94.0	97.7	97.8	96.3	98.9	93.2
Baltimore & Ohio	96.3	92.0	98.1	98.6	99.1	97.5
Southeastern district:						
Southern	97.7	93.3	99.1	98.1	97.7	97.3
Louisville & Nashville	96.1	94.0	90.9	94.3	95.3	95.7
Northwestern district:						
Chicago, Milwaukee, St. Paul & Pacific	95.7	97.6	96.1	98.5	98.6	96.7
Great Northern	(1)	92.2	88.4	91.8	90.4	89.1
Chicago, Burlington & Quincy	95.0	98.0	96.8	95.3	99.0	97.4
Southwestern district:						
Atchison, Topeka & Santa Fe	94.7	95.0	95.8	96.5	95.4	97.3
Southern Pacific	91.4	94.2	91.2	94.3	95.1	94.6
Number of roads with 97.5 per cent or over	1	4	3	3	6	2

(1) Original reports not clear.

developed that the stability percentages for clerks, machinists and road freight firemen have moved upward over the period under review. In the case of clerks, as is shown in Table 2, there were only two roads which had an employment percentage of 97.5 or over in 1922, whereas the five roads were at that level in 1927. Likewise in the case of machinists,

figures for which appear in Table 3, the number of roads with employment percentages of 95 or over increased from 4 in 1923 to 7 in 1927, although there was an intervening drop to one in 1924. Finally, the regularity of employment among road freight firemen has increased progressively since 1922, when but one road had a percentage of 90 or over. In 1927, four roads had this percentage. These figures appear in Table 4.

Employment stability among telegraphers, yard brakemen and section laborers, on the other hand, has not developed an upward trend, according to the results of the survey. In the case of telegraphers, but two roads had a percentage of 97.5 or over in 1927 as against six in 1926, three in 1925 and 1924 and four in 1923. Detailed figures are shown in Table 5.

Table 6.—Per Cent of Full-Time Employment for Yard Brakemen, by Roads and Years

District and Railroad	1922	1923	1924	1925	1926	1927
Northeastern district:						
New York Central	76.9	92.7	92.3	90.1	94.0	94.9
Pennsylvania	86.2	96.8	93.7	94.8	94.2	90.2
Baltimore & Ohio	81.2	94.1	87.4	91.5	93.8	94.9
Southeastern district:						
Southern	78.5	97.1	94.5	91.4	94.5	94.3
Louisville & Nashville	91.6	92.1	93.0	89.9	96.0	92.4
Northwestern district:						
Chicago, Milwaukee, St. Paul & Pacific	85.4	93.9	90.3	92.3	93.4	96.3
Great Northern	80.6	91.1	81.5	82.5	79.1	77.9
Chicago, Burlington & Quincy	85.0	90.1	89.0	86.3	91.9	91.4
Southwestern district:						
Atchison, Topeka & Santa Fe	83.3	95.9	91.5	92.1	88.2	92.9
Southern Pacific	86.2	90.1	91.9	89.6	90.7	89.3
Number of roads with 92.5 per cent or over	0	6	3	1	6	5

The number of roads with percentages of 92.5, in the case of yard brakemen, as shown in Table 6, was five in 1927 as against six in 1926, one in 1925, three in 1924 and six in 1923, so that with respect to this occupation no regular trend is determinable.

At no time during the period under review did more than four of the 10 selected roads have a stability percentage of 90 or over in the case of section laborers. In 1924 and 1925 the figure was four but it dropped to two for 1926 and 1927, the same as in 1922. These figures are shown in Table 7.

As is pointed out in connection with the study the reader should be cautioned that the figures relate solely

Table 7.—Per Cent of Full-Time Employment for Section Laborers, by Roads and Years

District and Railroad	1922	1923	1924	1925	1926	1927
Northeastern district:						
New York Central	77.2	85.0	80.7	83.3	82.9	83.4
Pennsylvania	88.3	85.2	90.0	94.5	88.3	84.7
Baltimore & Ohio	67.8	73.0	83.0	83.1	77.3	82.9
Southeastern district:						
Southern	89.0	88.1	91.4	93.5	93.9	91.3
Louisville & Nashville	94.5	88.3	90.5	95.3	95.4	92.6
Northwestern district:						
Chicago, Milwaukee, St. Paul & Pacific	66.9	66.5	74.8	69.5	74.2	68.5
Great Northern	71.4	61.8	74.5	68.3	64.2	66.8
Chicago, Burlington & Quincy	64.6	68.8	71.1	75.8	75.2	77.6
Southwestern district:						
Atchison, Topeka & Santa Fe	86.0	83.8	80.3	84.6	84.1	82.3
Southern Pacific	91.7	90.4	92.0	90.7	89.4	87.5
Number of roads with 90 per cent or over	2	1	4	4	2	2

to regularity of employment and in no way indicate the amount of employment, since the gross amount of employment may increase in one period over a previous one but the regularity may be greater in the latter. Also, it is conceded that perhaps more accurate measures of a mathematical character might be employed, but the selection was made because of the method's simplicity and clarity.

Why Empty Car Mileage Has Increased

Reflects elimination of car shortages and would not be remedied by adding to car supply

By M. J. Gormley

Chairman, Car Service Division, American Railway Association

OUR attention has been called to the article by C. B. Peck, Managing Editor, Railway Mechanical Engineer, which appeared in the August 4 issue of the *Railway Age*, entitled "The Utilization of Freight Cars."

Mr. Peck has assembled some very interesting and valuable data. The theories and conclusions, however, with respect thereto have the same basic defect of many other statements on this same subject. They do not take into consideration all of the facts, which, if done, must lead to very different conclusions from those enunciated by Mr. Peck.

Mr. Peck advances the propositions (a) that possibly we need more freight cars, and (b) that if there were more freight cars in service on the railroads there would be less empty mileage. The only possible conclusion one can reach from this argument is that empty car mileage would be reduced because with more cars there would be a greater number standing still.

We quote some parts of the statement by Mr. Peck, followed by our comments:

1. In 1923, with its slight increase in business over 1920, empty car mileage had increased 18 per cent; in 1925, with practically the same volume of business, it had increased 28½ per cent, and in 1926, had increased 40 per cent over 1920. Despite the decline in the volume of business handled in 1927, the number of empty car miles had still further increased to 42 per cent over 1920. *This, then, is the explanation for the greater proportionate increase in car-miles per day than in loaded car-miles and in the maintenance of practically the same number of miles per car day in 1927 as in 1926, despite a decline in business and a similar decrease in the number of loaded car-miles.* *** This is the price which the railroads have paid to make a car supply which in 1926 was only about two per cent greater than in 1920 handle a traffic eight per cent greater than that in 1920, and to handle it without car shortage.

(A) The low ratio of empty car mileage to total car mileage in 1920 was a distinct evidence of impaired transportation, caused by railroad strikes and other post war difficulties. It is a well known fact that, in periods of congestion, when all cars cannot be moved promptly, loaded cars are moved in preference and empty equipment receives slower movement or is permitted to stand idle.

(B) Empty cars are not handled in return movement to the producing sections with as much promptness during periods of congestion as during periods when the railroads are wide open. Car shortages are the result, with consequent general complaint such as occurred in 1920. During that year, from the standpoint of the percentage of empty car mileage to total mileage, a wonderful record was made. From every other standpoint, especially service and net earnings, a poor record was made. In 1922, another year during which a railroad strike occurred, we find conditions similar to those obtaining in 1920. A good record was made on percentage of empty mileage, for the simple

reason that empty cars were not moving, with resultant car shortage, particularly in the agricultural territories. In fact, 1920 and 1922 were such abnormal years that any comparison of normal years with those two years is valueless.

2. The car ownership of the Class I railroads has shown little tendency either to increase or decline since 1920. *** With each succeeding increase in business, this fairly constant number of cars has rendered a slightly increasing amount of service, but the promptness of the service has increased very materially. More car loadings have been required because of the decline in the average load. This improved service has been effected at the cost of a marked increase in empty car-miles. *** The aggregate cost of this extra car mileage was about \$100,000,000 in 1926 and \$120,000,000 in 1927. The average freight car capacity and weight continue to increase steadily, while the average car load had declined since 1920.

(A) This statement is misleading in that it refers to average tons per car obtained by dividing the total net ton miles by total loaded car miles, which includes all less-than-carload traffic. The facts are, considering the carload traffic alone, where the shipper is responsible for the loading, that the actual tons per car of carload traffic in 1920 was 34.5 and in 1927 was 35.1. The effect of a variation in the character of traffic handled is not generally recognized. When we have a decrease in heavy loading traffic and an increase in light loading traffic, one period compared with another, it very greatly affects the average tons per car, and likewise has a very great bearing on the empty car mileage.

In 1927, compared with 1920, coal loading decreased 1,178,151 cars; automobile loading increased 307,192 cars; fruit and vegetable loading increased 246,808 cars; oil loading increased 895,677 cars.

(B) The effect of these variations on the general average tons per car may be gauged by the average tons per car on this traffic in 1927, as follows:

Coal	52.7
Automobiles	8.4
Fruits and Vegetables	14.4
Oil	29.3

(C) Refrigerator cars used in the movement of fruits and vegetables and tank cars used in transportation of oil move empty in one direction almost exclusively; to a large extent this is also true of automobile cars. As such one-way traffic increases from year to year we get a proportionately abnormal increase in the percentage of empty mileage, entirely due to the class of traffic handled.

(D) A very decided increase in the tons per car has been made in a considerable volume of carload traffic. Sand, stone, gravel, coal and ore loaded to an average of 52.6 tons per car in 1927, an increase of 3.3 tons over 1920. Had the tons per car on these commodities been the same in 1927 as in 1920 it would have required the handling of 862,761 additional cars to have moved the 1927 tonnage. The average tons per car of wheat was 40.2 tons in 1920 and 42.3 tons in 1927.

Here again, if the tons per car had been the same in 1927 as in 1920, it would have required the handling of 31,812 additional cars to have moved the 1927 wheat tonnage. A number of the larger roads have greatly exceeded this increase of 2.1 tons per car of wheat 1927 compared with 1920.

3. Shall this condition continue unchecked? May it not be possible that some of the increased empty car mileage could be traded at a profit for more cars? May it not be time for car designers to study the problems of weight and capacity, particularly of box cars, in the light of changing conditions.

The "problems of weight and capacity" are being given constant and continuous study by the Mechanical Division and the practical railroad officers on its committees. The dimensions and weight of freight cars are directly affected by the trend toward increased train loading in gross tons in an endeavor to keep to a minimum the transportation costs per ton hauled. One reason why the capacity of the cars has increased is because the strength requirements for proper train and yard handling have increased. Since the strength is there, the capacity may as well be.

(B) We must assume as stated above, that Mr. Peck has the idea if we had more cars in service on the railroads a greater number would have to remain idle and thus not make mileage. How Mr. Peck could possibly advocate an addition to the number of car units in the face of the large surplus of cars we have had for the past three years is beyond our imagination.

(C) As everyone knows, we have a very large movement of box car commodities, foodstuffs of the west, moving to the east, and there is not sufficient return movement to utilize all that equipment and a considerable part of it must return empty. If these cars were allowed to remain in the east when empty they would very quickly cause congestion, and result in car shortages in the west.

(D) Take the New England situation as an example. In years gone by criticism was directed at roads in that territory for maintaining on line a large number of box cars beyond their actual ownership, and the statement was frequently made that they did not own sufficient equipment to handle their business. Exactly the reverse was true. A large proportion of cars that move into New England loaded must go out empty through a lack of sufficient westbound traffic to utilize them. Therefore, it is unnecessary to hold any equipment in New England for prospective loading. Our studies show that the New England railroads should not own any equipment for participating in through traffic moving off of their lines beyond the industrial territory immediately west of the Hudson River, and that they should only own equipment enough to handle their local business and such of the traffic as they participate in with other New England lines.

(E) The plain facts are that no considerable control can be exercised over the empty mileage of coal, flat, stock, automobile and refrigerator cars because the loading is chiefly in one direction and the cars must be returned to the territory where the traffic originates. *Only the empty mileage of the common box car is susceptible to any possible control and this is affected by the volume and variations of unbalanced traffic.*

(F) We have some figures which indicate that 75 to 80 per cent of the mileage made by box cars is loaded. If we deduct from the 20 to 25 per cent empty mileage that portion made by the necessary movement of cars to producing territory we have left the only factor subject to any control, namely, *the movement of the empty car parallel with the direction of the preponderating loaded traffic.* This subject is constantly under investi-

gation and surveillance by the railroads and the Car Service Division.

(G) The total figures of the railroads showing empty and loaded movements are no guide to the empty mileage made in the direction of the preponderating loaded traffic. That figure can only be determined by a day-to-day handling by superintendents of transportation, division officers, including car distributors, and others. The published reports that show a certain percentage of empty mileage westbound and a certain percent eastbound do not in themselves constitute any evidence of the cross haul of equipment of the same class.

(H) There being only the one item of empty mileage actually subject to control by railroad management—viz., the movement of the common box car empty parallel with the direction of the predominating loaded traffic in the same class of car—it follows that no cost figures of alleged excess empty mileage can be supported unless the exact amount of such parallel handling of loaded and empty box cars can be shown, one period compared with another. No such data exist at the present time. It is impossible even to support the statement that there was any increase in 1926 or 1927 over 1920 in that part of the empty mileage that was not controlled by a fluctuation in the various classes of traffic handled. Therefore, the only part of the additional operating expense caused by the increased empty car mileage, would be chargeable to that part of it caused by the increase in that class of traffic that added to the sum total of empty car mileage. No figures are available to show what that is and therefore any statement that \$100,000,000 to \$120,000,000 is the aggregate cost of this mileage is guesswork.

The constant endeavor of the railroads and the Car Service Division is so to improve the handling of equipment as to reduce to the lowest minimum the movement of the empty car in the direction of the preponderating loaded traffic. The chief obstacle to this accomplishment is surplus equipment. Thus, we draw a conclusion diametrically opposite to that reached by Mr. Peck. Our fixed opinion is that *the percentage of empty mileage is more susceptible to improvement by a reduction in the number of cars than by an increase.*

We made the statement in 1927 that the business of the country could be handled for some time to come with a decrease of 100,000 cars in units of railroad ownership, provided there was a continuation of the program of replacing with larger cars the smaller and inefficient cars. A year and a half has gone by since that statement was made, but if our opinion were asked today, the answer would be to increase the number of cars that could be dispensed with rather than to decrease that figure.

* * *



On the B. & M. at Salem, Mass.

Double-Header Rule Becomes Issue in Wage Case

Rules testimony forces wage increase angle of controversy before emergency board at Chicago into background

THE Conference Committee of Managers of the Western Railways opened its case in the second week of the emergency board's hearing at Chicago of the dispute between the carriers and their train service employees, over a wage increase and certain working rules, on October 8 with Charles Donnelly, president of the Northern Pacific, as the first witness. Mr. Donnelly declared that since the denial by an arbitration board in 1927 of any wage increases to the men now involved in this controversy, the condition of these same employees has improved through a further decline in the cost of living, while at the same time the ability of the western railways to stand higher wage bills has been further lessened by reduced earnings.

Mr. Donnelly, in introducing his statement, called attention to the fact that although he appeared primarily on behalf of the Northern Pacific, operating in seven states, he was also interested in the case on behalf of the Burlington, operating in eight additional states, in which the Northern Pacific owns a half interest. He characterized the controversy before the board as one which involves essentially only the question of wage increases equal to those given recently to other classes of railroad employees—an issue of either a $6\frac{1}{2}$ per cent or a $7\frac{1}{2}$ per cent increase. The question of the elimination of the double-header rule, Mr. Donnelly thought should be considered separately from the wage question.

"The only purpose of the double-header rule is to multiply train movements and consequently to increase the number of openings for train service employees," he stated. "This rule is in defiance of every economic law of efficient management, and had the single-engine trains been restricted as the double-header trains are, the bulk of the western railway mileage would now be in the hands of receivers. The sum total of the saving which could be effected by the Northern Pacific, if we were permitted to operate double-header trains on the first and second Yellowstone districts, between Glendive, Mont., and Mandan, N. D., would be so much that we would very willingly give a $7\frac{1}{2}$ per cent wage increase and abolish that rule, rather than a $6\frac{1}{2}$ per cent increase, and keep the rule.

"If the double-header rule is in effect and if the safety of employees is to be seriously imperiled by its discontinuance, no management can justify itself in coming before you or any other tribunal and asking that it be wiped out. But it is perfectly plain that to the extent that the safety is imperiled by the length of the train, that it is not the double locomotive, the double-header train that makes the difference, it is the length of the train, whether it is hauled by one locomotive or two. Train service employees are in the same peril on the third and fourth Yellowstone districts on the Northern Pacific, between Livingston, Mont., and Glendive, where one locomotive hauls an eighty-car train, as between Glendive and Mandan."

The second witness presented by the carriers was L. E. Wetling, manager of the statistical bureau of the Western Lines, who presented figures showing the un-

favorable financial position of the western railways as compared with the railways in the East and the Southeast. He introduced exhibits showing, in the Eastern, Southern and Western districts, the rate of return of Class I railroads on property investment and on aggregate value, as set by the Interstate Commerce Commission, the net railway operating income compared with the return paid by the government during federal control, the average capital stock outstanding and the rate of cash dividends paid, operating efficiencies, the cost of providing increased power and capacity of equipment, the operating averages for road train service employees, the railway taxes, the rate levels, the freight and passenger traffic density, the freight rate increase and reductions, the revenue losses resulting from reductions in average ton mile earnings and the economic conditions in the West, as defined by Congress and the Commission and reflected in railroad rates.

"Freight rate reductions have been made since 1921 which have cost the Western railways one and three-quarter billions of dollars," Mr. Wetling continued. "In other words, if the freight rate level of 1921 had been maintained in effect throughout the last six years, the Western railways would have received approximately \$1,750,000,000 more for the same amount of transportation service than they actually did receive. In 1928, the freight rate level of the Western lines showed a reduction of more than 17 per cent below 1921, this reduction amounting to \$362,000,000 in the last year alone.

"In addition to reduced freight rates and the consequent reductions in earnings, we are confronted with a tax burden which is relatively higher than that borne by the railways in any other section of the country. While the taxes of the Eastern railways amount to \$640 per million traffic units and the taxes of the Southern roads amount to \$660 per million traffic units, the corresponding taxes of the Western lines total \$833, a figure 30 per cent higher than in the East and 26 per cent higher than in the South.

"Our unfavorable position is shown by the fact that net earnings per mile of road in 1927 amounted to \$2,994 for the Western roads, \$4,812, for the Southern roads, and \$7,636 for the Eastern roads. From the so-called test-period—the annual average of the three years ending June 30, 1917—to 1927, net earnings per mile of road increased twenty-seven per cent in the East, increased forty-eight per cent in the South, and actually decreased four per cent in the West.

"This situation has come about despite the greatest efforts on the part of the Western lines to increase the efficiency and economy of their operations. In seven years, these Western roads have invested more than one and one-half billions of dollars of new money in their properties with just these ends in view. This total of \$1,500,000,000 includes \$206,000,000 for new locomotives, \$426,000,000 for new freight cars, \$53,000,000 for new passenger cars, \$32,000,000 for other new

equipment, and \$840,000,000 for additions and improvements to roadway and structures. Despite these expenditures and the maximum effort toward constantly increasing efficiency and economy, the Western roads last year earned a return on their investment of but 3.84 per cent, while the Eastern roads earned 4.40 per cent and the Southern roads 5.21 per cent."

The two train service brotherhoods completed the presentation of testimony for the employees on October 5. That day and the previous day were occupied by the general chairmen of the Brotherhood of Railroad Trainmen and the Order of Railway Conductors who testified concerning the wage rates paid conductors and trainmen on western railways in comparison with those paid in the South and East. A great deal of testimony was also given to picture the effect of the "pick-up and drop" or "conversion" rule in its tendency to convert a through freight train into a local way freight train.

C. H. Smith, chairman of the general grievance committee of the Texas & Pacific, said that in order to grant trainmen in the West the same increases in compensation since 1913 that have been given in the East and South it would be necessary at this time to obtain the following increases in basic daily wage rates: local freight conductors, 82 cents; local freight brakemen, 60 cents; through freight conductors, 64 cents; to meet eastern increases and 54 cents to meet southern increases; through freight brakemen, 39 cents to meet southern increases and 47 cents to meet eastern increases. In connection with Mr. Smith's testimony A. F. Whitney, president of the trainmen, declared:

"The purpose of showing the increases granted the various trades as compared with the men we represent is to emphasize the fact that conductors, trainmen and yardmen have been discriminated against, largely because they are employed by public carriers who serve the public, and on account of that their wages have been neglected. They have refrained from getting into the limelight and trying to increase their wages, as other classes of labor have done. They are working under very largely the same conditions, with the exception that they are under a very heavy away-from-home expense and these classes of employees ought to receive greater consideration than they have in the past."

George W. Hunt, general chairman of trainmen on the Oregon Short Line, pointed out the tendency to lengthen divisions on the Union Pacific as an example of the apparent efforts of the roads to abolish the payment of penalty overtime. He produced figures showing that executives, officers and staff assistants on the railroads in the East in 1926 received an average salary of \$5,313 per year, in the South \$5,265 per year and in the West \$5,474 per year and declared that the amount that would be saved by reducing the salaries of officers in the West to the level obtaining in the East or South would be sufficient to take care of the amount the railroads expect to save by the elimination of the double-header rule. Later in the hearing the carriers introduced the same Interstate Commerce Commission figures broken down into "executives, general officers and assistants" and "divisional officers, assistants and staff assistants." These figures showed that in the first classification the salaries in the respective regions were: East, \$7,514; South, \$6,530; West, \$6,968, and in the second classification the salaries were East, \$3,962; South, \$4,012; West, \$4,087.

The brotherhoods introduced other witnesses for the purpose of showing that the railroads throughout the West have made a practice of using through freight crews to perform local or way freight work. They did

not particularly desire to receive local freight wage rates for crews performing essentially through freight service, E. P. Curtis, president of the conductors said, but he declared that the men wanted those employed in local freight service to do only way freight work and those in through freight service to do only through freight work. H. L. Smith, general chairman of conductors on the Chicago, Burlington & Quincy, and A. B. Pearson, general chairman of conductors on the Chicago, Rock Island & Pacific, testified in support of the request for a rule defining the limits of through and local freight service. George W. Hogan, a switchman in Chicago, was produced as a witness to testify to the need of yardmen for an increase in compensation over that received in 1927.

Counsel for both the carriers and the employees brought out in discussion the fact that neither the railroads nor the employees are satisfied with the operation of the adjustment boards for individual railroads as provided in the Railway Labor Act. The brotherhoods felt that in many cases adjustment boards were more unsatisfactory than direct dealing managements.

J. P. Haynes, representing the Chicago Association of Commerce, asked for permission to intervene on behalf of the shipping, receiving and traveling public and the board took his request under advisement. He declared that to date the public interest had not been properly protected in wage negotiations under the Railway Labor Act. Figures were introduced by E. J. Connors, supervisor of wages of the Union Pacific System, to show that the average yearly earnings of through freight conductors, local freight conductors, through freight brakemen and local freight brakemen are higher in the West than in either the East or the South.

Mr. Connors was followed on October 9 by J. L. Jacobs, economist of Chicago, who stated, that in order to meet a 65 per cent increase in the cost of living since 1914, the train service employees of the Western railways have secured an increase of more than 90 per cent in their average annual earnings. "The wage increase of 6½ per cent would place the wages of these men at the highest actual point in dollars and cents ever reached," he continued. "And when we consider the great drop in living cost which has occurred since 1920, the increase would place their purchasing power from 27 to 30 per cent higher than the purchasing power of their peak wages of 1920. Higher earnings are received in the West in spite of the fact that the Bureau of Labor statistics show both that food costs in the East and South are more than 5 per cent higher than in the West, and that the average weekly earnings of manufacturing employees east of the Mississippi river are 6 per cent higher than in the West."

Average annual earnings of the western conductors and trainmen of \$2,437 compare with an average of \$1,388 received by industrial workers in the Seventh Federal Reserve District, \$1,313 received by industrial workers in the West, \$584 received by the average male farm worker and \$886 as the income of the average farm family. In the last eight years retail food prices have dropped 30 per cent and the cost of living has declined 20 per cent. The average annual earnings of train service employees have been reduced less than 4 per cent since 1920 and if these men had accepted the 6½ per cent increase offered them by the railways their annual earnings would be approximately 3 per cent greater than at that time."

On October 10, James R. Garfield, chairman, announced that the Board had decided to allow the Chi-

wage eight said, ed in t and rough con- d. A. the part of though pitch- stify sensa- yeas rail- er- erads her- were . nation be- and de- op- way ors, to right right the . L. or- ng mern er- nse ts er- ce g s e s r s 1. The Association of Commerce to intervene to protect the public interest in the proceedings and at the same time denied the Illinois Manufacturers Association, through Charles A. Livingston, permission to submit material showing the effect of possible decisions of the Board on freight rates. This organization was permitted to join with the Association of Commerce in their intervention. Mr. Garfield held that the effect of the Board's decision on freight rates was not an issue in this proceeding. William J. Hagenah, vice-president of the Byllesby Engineering & Management Corporation, testified that a general survey of business conditions in the United States showed that genuine and extensive prosperity existed in the East, slightly less prosperity in the South and much less prosperity in the West, with the exception of Illinois and California. Agriculture of all Western industries has suffered most severely, he said. The greater part of the day was given over to the testimony of J. W. Higgins, chairman of the Conference Committee of Managers of the Western Railways, and more than three hours were devoted by counsel for the Brotherhoods to cross examination of Mr. Higgins. Details of Mr. Higgins' testimony will be covered in the *Railway Age* of October 20.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading, with a total of 1,196,768 cars during the week ended September 29, was larger by 53,554 cars than in the preceding week, and represented increases of 69,865 and 16,719 cars respectively as compared with the totals in the corresponding weeks of 1927 and 1926. Loading of forest products and less-than-carload merchandise only was smaller than a year ago. Miscellaneous freight and coal led the increases reported in other commodity classification totals. In the several districts, the Pocahontas and Southern totals for the week alone showed a decrease as compared with last year. The summary, as compiled by the Car Service Division of the American Railway Association is shown in the accompanying table.

The freight car surplus averaged 146,800 cars during the period ended September 23 as compared with 173,724 cars on September 15. The total included 75,315 box

cars, 39,399 coal cars, 14,425 stock cars, and 8,716 refrigerator cars.

Revenue Freight Car Loading			
Week Ended Saturday, September 29, 1928			
Districts	1928	1927	1926
Eastern	264,405	245,275	265,329
Allegheny	236,346	222,375	237,811
Pocahontas	63,811	64,016	60,342
Southern	164,093	169,514	168,250
Northwestern	186,103	172,312	183,598
Central Western	180,865	164,432	173,656
Southwestern	101,145	88,979	91,063
Total Western Districts	468,113	425,723	448,317
Total All Roads	1,196,768	1,126,903	1,180,049
Commodities			
Grain and Grain Products	63,335	55,010	48,247
Live Stock	36,662	35,427	38,629
Coal	206,294	193,729	220,482
Coke	10,749	9,816	12,415
Forest Products	66,933	67,841	71,506
Ore	62,109	52,879	71,659
Merchandise, L.C.L.	270,188	270,977	272,423
Miscellaneous	480,498	441,224	444,688
September 29	1,196,768	1,126,903	1,180,049
September 22	1,143,214	1,126,402	1,175,407
September 15	1,138,312	1,127,643	1,179,259
September 8	991,042	989,799	1,024,998
September 1	1,116,948	1,117,360	1,143,448
Cumulative totals, 39 weeks	38,217,129	39,172,754	39,572,629

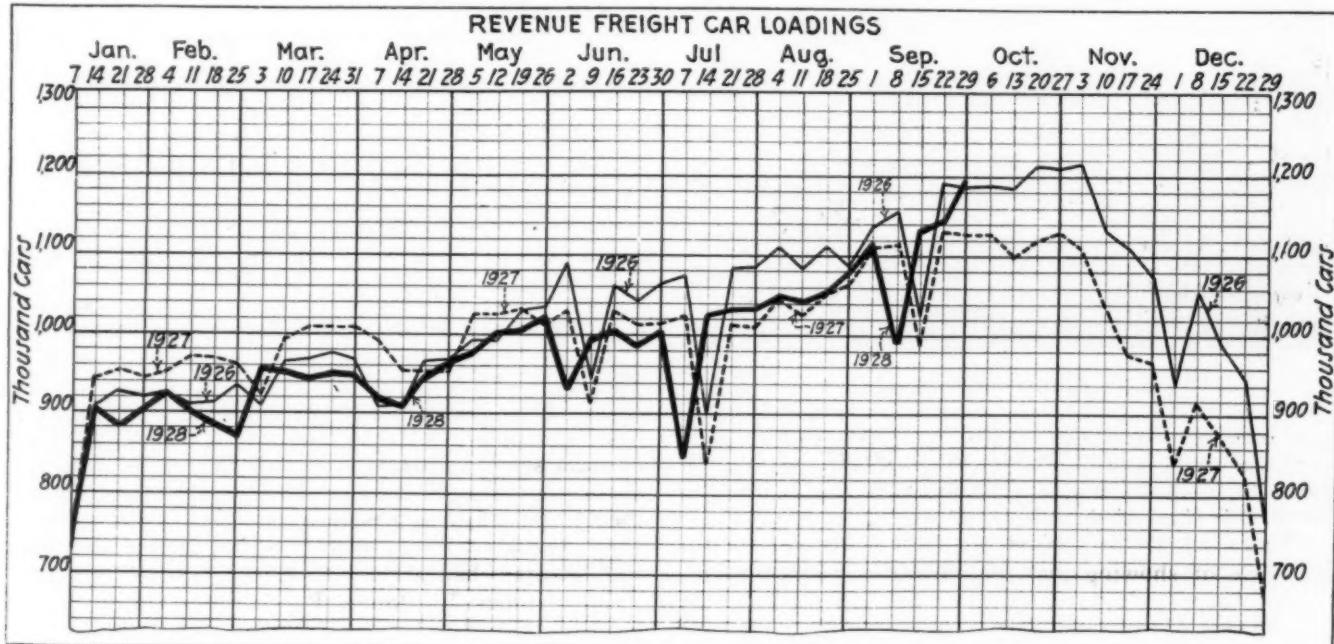
Car Loadings in Canada

Revenue car loadings at stations in Canada for the week ended September 22 totalled 94,631, a new high record for Canada, being 3,946 cars more than last year's high peak of 90,685 cars for the week ended October 29, 1927. They showed an increase of 5,102 cars in grain loading and 815 cars in coal. They were heavier by 19,788 cars than those of the same week last year. The cumulative loadings for 1928 to September 22 were 2,537,364 cars, as compared with 2,336,917 for the same period last year.

Canadian Loadings

Revenue car loadings at stations in Canada for the week ended September 29 totalled 92,287 cars, a decrease from the previous week of 2,344 cars, and an increase over the same week last year of 9,884 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
Sept. 29, 1928	92,287	43,058
Sept. 22, 1928	94,631	41,505
Sept. 15, 1928	88,086	40,017
Oct. 1, 1927	82,403	38,542
Cumulative Totals for Canada		
Sept. 29, 1928	2,629,651	1,527,827
Oct. 1, 1927	2,419,294	1,465,450
Oct. 2, 1926	2,312,518	1,454,806



Communications and Books

Single Classification Yards

NEW HAVEN, CONN.

TO THE EDITOR:

On page 482 of the *Railway Age* of September 15 there appeared a discussion of the advantages of a single classification yard, which did not cover the situation fully. Where there is a single yard, there is the immediate gathering in the proper classification, without duplication of facilities or handling, of cars which obviously may come from either or all directions, destined to the repair tracks, the freight house, the team tracks, industry tracks, interchanges with other railroads, and groupings for diverting lines, all of which, if concentrated, reduce the amount of facilities that must be provided and expedite the service.

Another big advantage is that in many instances eastbound and westbound traffic, each considered individually, are too light to justify gravity switching, but combined, the gravity operation becomes possible, including the use of retarders.

If all of the facts could drift back home to the heads of the various lines, I think that we would find an enormous development of single-hump, retarder-operated gravity yards, handling in the first instance, traffic to and from any and all directions; these being located at fairly important points of origin, destination, junctions, or terminals between districts of different rates of prevailing grades.

E. J. PEARSON,
President, N. Y., N. H. & H.

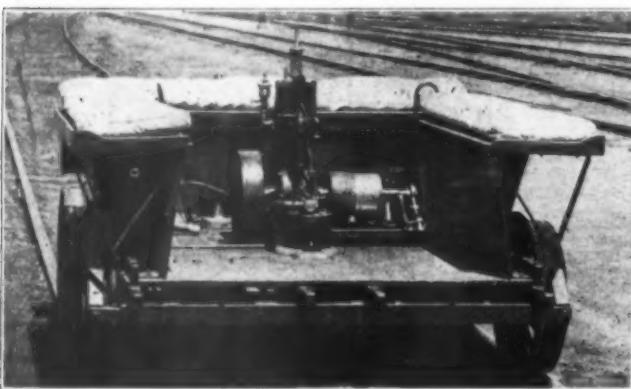
The First Track Motor Car

NEW YORK, N. Y.

TO THE EDITOR:

As a matter of possible interest, I am sending you a photograph of the first gasoline-propelled hand car, to the best of my knowledge and belief, made in this country, which was built in 1893. I used this hand car for inspection purposes, as at that time I was superintendent of the St. Louis division of the Chicago, Burlington & Quincy.

The engine was built by a small company located at Buda, Ill. The ignition system consisted of a Bunsen burner, the flame of which was centered on a small capped pipe screwed



A Track Motor Car of 1893

into the head of the cylinder. This was enclosed by a jacket and when the pipe became red hot, the piston, at the top of its stroke, touched a trigger which opened a port at the bottom of this pipe and the compressed gas was thereby ignited.

We used a leather belt extending from a pulley on the shaft to a pulley on the axle. The gear shift was accomplished by

a loose pulley and on a grade the belt was shifted over onto the loose pulley sufficiently to allow the speed of the engine to continue with such adhesion as could be obtained by slipping on the tight pulley.

Perhaps some of your readers may have knowledge of an earlier construction.

W. G. BESLER,
Chairman of the Board, Central Railroad of New Jersey.

New Books

Practical Color Simplified, by William J. Miskella. 114 pages, illustrated in color, 6 in. by 9 in. Price \$3.50. Published by Finishing Research Laboratories, Inc., 1164 West Twenty-second street, Chicago.

This book is a systematic presentation of the principles of colors and their combinations, and gives a clear exposition of the relation of hue to tint, shade, strength and other terms that are more or less loosely used in describing colors and their effects. It also presents a clear outline of the principles of color harmony and contains a valuable chapter of the properties of the common pigments.

Proceedings of the International Railway Fuel Association. Published by the International Railway Fuel Association, 313 Railway Exchange, Chicago. Illustrated, 564 pages, 6 in. by 9 in. Flexible red leather binding.

Besides the regular reports of committees on Diesel Locomotives, Firing Practice, Front-Ends, Grates and Ashpans, Fuel Economy, Locomotive Fuel Stations, etc., the proceedings of the twentieth annual convention of the International Railway Fuel Association held at Chicago, May 8 to 11, 1928, record in full the several individual papers and discussions on Some Economic Aspects of Fuel Conservation, by J. H. Parmalee; Roller Bearings in Relation to Fuel Economy, by K. F. Nystrom; Some Aspects of the Trend of Locomotive Fuel Economy, by W. L. Bean; Possibilities in Future Locomotive Design, by W. E. Woodard; Locomotive of Today and the Future as a Factor in Fuel Economy, by A. W. Bruce, and Combustion in the Locomotive Boiler, by Lawford H. Fry.

The Bunkhouse Man. By Edmund W. Bradwin, Ph.D., Director of Instructors, Frontier College, Toronto, Ont. 300 pages. 6 in. by 9 in. Published by the Columbia University Press, New York. Price \$5.

The Bunkhouse Man is an enlightening study of the work and pay in the labor camps of Canada during the period from 1903 to 1914, dealing particularly with the camps maintained in connection with the construction of the National Transcontinental, now a part of the Canadian National Railways. The author has based the book on 24 years of practical experience with the work and pay of men in frontier places across Canada. While showing an intimate and thorough understanding of the problems of the railway contractor, and a sympathetic attitude toward him, the book is written primarily from the standpoint of the worker.

After outlining the historical development of transportation in Canada and the background of the navvy, or common laborer, on railway construction, the author explains the contract system under which the Canadian railways were constructed and then vividly pictures the life of the campmen, including the methods by which they were hired, their work, pay, and housing conditions. Within this section are described the evils which were rampant in the hiring of men for work of this character. It also clearly describes the arduous nature of the work, together with the housing conditions afforded.

Throughout, the book is historical, educational and constructive. Credit and indictment are given freely to laborer

and employer alike, and in the latter chapters, practical suggestions are made for improving the conditions of the campmen, which, in many instances, even at the present time, are depicted as far from that which is to be desired. While the book has its setting in the Canadian frontier and is therefore of particular interest to Canadians, its frequent reference to the similarity of conditions which were to be found in the United States during the period of its rapid railway expansion, makes the book of interest to railway men in this country.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Consolidated Railroads of Cuba—An Analysis. Brief history of properties, operation and traffic. 4 p. Pub. by Potter & Co., New York City. *Apply.*

The Panama Canal and Its Ports. Port series no. 22 prepared by Board of Engineers for Rivers and Harbors, War Department, in cooperation with Bureau of Operations, U. S. Shipping Board. "Railroads—Panama Railroad freight classification and tariff," storage and car demurrage rules and switching tariff, p. 53-57. 72 p. illus. charts. Pub. by U. S. Govt. Print. Off., Washington, D. C., 35 cents.

Correction: The price of *Economics of Rail Transport in Great Britain*, by C. E. R. Sherrington, noted in the September 29 Booklist, is 25 shillings per set, instead of 12. In American money, the price is just announced as \$10 per set, \$5 per volume.

Requirements of Passenger Lines and Recommendations for Goods Lines of the Minister of Transport in Regard to Railway Construction and Operation. Includes also Fire precautions for electrically operated railways (Appendix 1), Clearances, (Appendix 2), and requirements regarding brakes (Appendix 3). 22 p. Pub. by H. M. Stationery Office, London, Eng. 1 shilling. Available in this country at British Library of Information, New York City.

Report on the Grain Trade of Canada for the Crop Year ended July 31 and to the Close of Navigation 1927, by Agricultural Branch, Dominion Bureau of Statistics. Statistics of rail movement under "Country elevators and primary movement", "Inspections", and "Public and Private Terminal Elevators". "Transportation rates by rail", p. 172-180. 205 p. Pub. by F. A. Acland, Ottawa, Canada. 50 cents.

Periodical Articles

All-Steel Cars—and Farm Relief. "An 'all-steel passenger car' is illustrative of a hundred voluntary improvements in railroad service." Editorial comment on two current developments. *Commercial and Financial Chronicle*, October 6, 1928, p. 1858-1859.

Protection of Employee Against Removal of Employer's Place of Business. Recent laws and court decisions. "Reimbursement in case of moving of railroad terminals" p. 79-80. *Monthly Labor Review*, September 1928, p. 78-81.

The Changing Transport Service. Mitropa's air diners, new railway services, air services, bus services, listed in brief notes indicating how the transport world "do move." *Magazine of Business*, October 1928, p. 440-445.

Modern Transport in the United States. No. 1—Petrol-electric buses in Philadelphia. *Modern Transport*, Aug. 18, 1928 p. 5-6; No. 2—First oil-electric locomotive built for long-haul freight service [on N. Y. C.]. *Modern Transport*, Aug. 25, 1928, p. 3-4; No. 3—Petrol-electric buses in Philadelphia. *Modern Transport*, Sept. 1, 1928, p. 5-6; No. 4—Road-rail co-ordination in New England. *Modern Transport*, Sept. 8, 1928, p. 4-6; No. 5—Co-ordination in New Jersey. *Modern Transport*, September 15, 1928, p. 14-15, 20, September 22, 1928, p. 12-13, 19.

Looking Backward

Fifty Years Ago

A consolidation engine on the Susquehanna division of the Northern Central [now a part of the Pennsylvania] on September 30 hauled from Clark's Ferry, Pa., to Sunbury, 39 miles, a train of 183 empty eight-wheeled cars, one loaded car, one dead engine and two cabooses. The length of the train, which is probably the longest ever hauled in practical railroading, was 5,904 ft. and its weight, 3,694,000 lb.—*Railroad Gazette*, October 11, 1878.

General William T. Sherman, who is in charge of troops garrisoned in Arizona, has written a letter to the vice-president of the Southern Pacific calling attention to the military convenience of that railroad's lines in the Southwest. General Sherman states in part:

"I cannot neglect the opportunity to thank you for having built a first-class steel railway across the Great Desert to the Colorado River. * * * A railroad east and west through Arizona is a great civilizer, and will enable the military authorities to maintain peace and order among the Indians, as well as the equally dangerous class of robbers who have so much increased in numbers and boldness. The extension you plan to build from Yuma, eastward to Santa Fe, will be most valuable to the military authorities."—*Chicago Railway Review*, October 12, 1878.

Twenty-Five Years Ago

Forty-nine railway and four express companies operating in Texas have been attacked by the railroad commission for violating the anti-trust law of Texas by entering into exclusive contracts for the transportation of express matter and charging higher rates than for freight.—*Railway Age*, October 16, 1903.

The Kansas Supreme Court holds, in a decision rendered on October 10 in a case in which the Kansas City, Mexico & Orient sought to build a line through the yards of the Atchison, Topeka & Santa Fe, at Emporia, Kan., that one railroad cannot condemn for right-of-way purposes the land of another which is actually in use for railway purposes.—*Railway Age*, October 16, 1903.

The New York Court of Appeals has ruled that a pass in a Pullman car is, to all intents and purposes, a railroad pass, and a public officer who accepts the privilege of riding free in a parlor or sleeping car accepts a pass for free transportation. The ruling is based on the assumption that such accommodations have come to be regarded as a necessity by a considerable portion of the traveling public.—*Railway Age*, October 16, 1903.

Ten Years Ago

Secretary of the Interior Lane announces the completion of the government railroad between Anchorage, Alaska, and Seward 114 miles, making possible the shipment of coal from the Matanuska mines directly to Seward.—*Railway Review*, October 12, 1918.

The director general of railroads, believing that it will be for the general welfare and a factor in beneficially stabilizing money rates, announces that he will lend at the rate of 6 per cent to railroads for the renewal mortgage bond issues maturing between the present time and July 1, 1919.—*Railway Age*, October 11, 1918.

The officers of the railway labor brotherhoods continue to protest to Director General McAdoo against his order prohibiting railway officers and employees from participating actively in politics. The heads of the brotherhoods had conferences with the director general on September 27 and October 3 and, according to reports, he refused to recede from his position.—*Railway Age*, October 11, 1918.

Odds and Ends of Railroading

The newspapers report that John Coolidge has accepted a job, not a position, in the freight department of the New York, New Haven & Hartford. Judging from the past experience of the *Railway Age*, he will be kept pretty busy for a while answering letters from both pessimists and optimists on the general subject of "The college man and the railroads." However, he may choose not to take part in the controversy for, according to a headline in a recent issue of a New York newspaper, we learn that "Coolidge, Jr., Reticent on Job." Evidently a chip off the old block.

A 13-Foot Waybill

A waybill, having the extraordinary length of 13 feet, was recently used by the Chicago, Burlington & Quincy in handling two carloads of assorted groceries from Chicago under a single waybill to Centralia, Ill., where a large mail-order house opened a store.

Unmentionables

Nighties, frilly, lacy, delicately tinted ones or long sleeved, gathered at the yoke, outing flannel ones, regardless of their alluring cost, are one item of clothing most frequently left in Pullman cars when the train comes to a halt, according to the records of lost and found articles kept by C. W. Gardner, union station agent, at Wichita, Kan.

An Island Empire

Napoleon at Elba had nothing on Robert E. Dolan, passenger conductor running between Omaha and North Platte, on the Union Pacific. Dolan is king not only of one island but of two. These islands are in the North Platte river, near Valley, Nebr. Dolan bought them some years ago and established his residence on the larger of the two. He spends practically all of his time there when not on his run.

Hauling the Candidate

Two western railroads came to grips recently over the question of which was to have the honor of furnishing the private car for Herbert Hoover on his trans-continental journey from Palo Alto, Cal., to Washington, D. C. The contest was fought to a draw, the Southern Pacific furnishing the car for the first leg to Los Angeles and the Santa Fe supplying the car from this point. As a result Hoover had the novel experience for a presidential candidate of transferring during the trip.

At Last, a Literate Steno

J. M. Auld, train stenographer on the Pennsylvania's New York-St. Louis flyers, has been using his spare time to attain success in the literary game during the last ten years. Auld has just recently completed his first novel, "Trump House." Before devoting his odd moments to writing, Auld studied at the Art institute in Chicago at night, working as a stenographer during the day. Eye strain caused him to abandon the art field, however, and he turned his attention to literature.

Rule G Arrives in Germany

The railway administration of Germany has ordered that milk markets be installed at strategic points to enable railway men to quench their thirst. The administration is sending out a special train to show the workers, graphically, the injurious effects of strong drink and the necessity for abstinence. In a letter to employees, the administration states that, in view of the attempts being made to increase the speed of trains, it is absolutely essential that the workers remain sober, particularly while on duty. There seems to be some logic in their arguments.

Automobile Profits

That "all is not gold that glitters" in the automobile industry is no fallacy, is illustrated by a wreck experienced by a small western railroad which was carrying a carload of one of the popular lower-priced automobiles. The railroad wrote the company to send its claim for the cars and a settlement would be made. A bill was accordingly received by the road for the retail price of each car. Since law requires the railroad to pay only cost price of goods damaged, the railroad notified the automobile concern to that effect. To the railroad's surprise the next bill received from the company was \$300 per car greater than the original claim.

A Bit of History

Among the many noted leaders of Civil War fame who were connected at one time or another with the Illinois Central was General George B. McClellan. After serving prior to the Civil War as chief engineer and vice-president of this road at Chicago, in complete charge of operation, McClellan became, at the age of 34, commander of the Army of the Potomac, the most important position in the Union Army. His accession to this position is believed to have been due in part to an acquaintance which he formed with President Lincoln while the latter was an attorney for the Illinois Central in Illinois. In 1864 McClellan was the Democratic nominee for president of the United States, and, for three years, later in life, he served as governor of New Jersey.

Russian High Finance

The salary of a workman of the lowest class on the Northwestern railway of Russia has just been calculated at 19,785,4375 kopecks per hour (about 10 cents). In the next grade the figure is 38,582,57125 kopecks per hour, and in the highest paid grade, 49,464,8775. Publication of these figures has brought some amusing and indignant comment from the soviet press, protesting that "the astronomers of the tariff bureau of the railroad are only making themselves ridiculous by such cosmic exactitude." Such precision of statistics may be valuable, the papers admit, in figuring out when Mars is next going to visit the earth, but is ridiculously bureaucratic as applied to practical affairs. "The time taken to calculate these details loses more money than the salaries calculated could gain," the comment says.

Rail Commission Invades New Territory

In an official "opinion and order" which has been duly entered upon its records, the Tennessee state railroad and public utilities commission has extended its jurisdiction to include "affairs of the heart." The document takes judicial cognizance of "Petitioners Malcolm R. Williams, engineer for the commission, and Miss Dolly Smith, beautiful and attractive daughter of Maj. and Mrs. Rutledge Smith, who are directed by the commission to enter into the holy bonds of marriage." The opinion of the commission, to whom the petition was made jointly by the bride and groom, was that Mr. Williams, upon investigation, was certain that he is an engineer for the commission, but was certain of little else. The commission also agreed that Miss Smith was much distressed at Mr. Williams' lack of concentration, but that she was willing to assume responsibility for it. The commission directed, with elaborate legal terminology, that the "petitioners" be duly married by a qualified minister, and that a multitude of signatures be affixed to the order, presumably to make it more binding.

NEWS of the WEEK



Southern Pacific Trains on Mississippi Car Ferry.—Galloway Photo.

FRANK OLIVER, a member of the Board of Railway Commissioners of Canada with headquarters at Ottawa, Ont., has retired under the age limit, having reached the age of 75 years.

THE AMERICAN RED CROSS announces that the annual roll call in New York City, beginning on Armistice Day, for the support of Red Cross activities, will as heretofore be in charge of volunteer chairmen of special groups; and that E. E. Loomis, president of the Lehigh Valley will head the group dealing with railroads and traffic offices and H. K. Brooks, vice president of the American Express Company will head the express group.

THE BOSTON & MAINE last week opened its night schools which have been established for the benefit of employees in the accounting and traffic departments. About 250 clerks and executives are enrolled in the accounting course, the sessions of which are held at the Boston University College of Business Administration. Lectures are given by Professor Walter J. Goggin and George F. Gacy, assistant controller of the Boston & Maine.

The courses on freight and passenger subjects are to be given at the railroad company's general office building, under the direction of vice-president N. W. Hawkes and J. W. Rimmer, his assistant.

THE INCOME TAX LAW OF MISSOURI is not intended to apply to income earned outside the state, according to a decision by circuit judge C. A. Burney given at Kansas City, on October 3; and Frank Rooney, a conductor on the Rock Island has won his suit to enjoin collection of a tax on a large part of his income, his run being between Kansas City, Mo., and Herrington, Kan. In his suit he averred that only one mile of his 200-mile run was in Missouri and he stated his earnings in that state as \$17.10 a year; the income in Kansas was \$3,194.10. The case will, no doubt, be appealed to the Supreme Court of the State.

M. P. Group Insurance

The Missouri Pacific has expanded its group insurance for employees, under-

written by the Missouri State Life Insurance Company, to insure general officers and supervising employees. The total number of employees affected by the extension is 3,018 and the maximum amount of insurance is \$9,734,000, an average of \$3,200. A recent check of the mechanical department, which was covered by a group policy several months ago, shows that 6,981 employees are insured for \$12,627,000.

Farmers to Revive Road

The Etrick & Northern, a railroad formerly operated between Blair, Wis., and Etrick, a distance of 10 miles, and on which business was discontinued on March 19, 1928, is being restored by farmers and business interests along the line. Through donations and the sale of stock, \$14,000 is being raised to recondition the track and purchase a gasoline locomotive. Stock in the new company is being sold at \$100 a share while donations, in the form of work in opening cuts that have caved in, near Etrick, are being received.

Farmers and villagers in the region built the Etrick & Northern about 12 years ago at a cost of about \$150,000.

Chicago Car Foremen Elect Officers

The annual meeting of the Car Foremen's Association of Chicago was held at the Morrison Hotel on Monday evening, October 8, with about 500 members and guests in attendance. The following officers were elected for the ensuing year: President, L. S. Barr, mechanical superintendent, Live Poultry Transit Company, Chicago; 1st vice-president, F. J. Swanson, general car foreman, Chicago, Milwaukee, St. Paul & Pacific, Chicago; 2nd vice-president, G. R. Anderson, district master car builder, Chicago & North Western, Chicago; treasurer, C. J. Nelson, chief interchange inspector, Chicago Interchange Bureau, Chicago; and secretary, G. K. Oliver, passenger car foreman, Chicago & Alton, Chicago.

Pennsylvania Golf Tournament

Officers and directors of the Pennsylvania were guests at the recent tourna-

ment in competition for the Atterbury Trophy and Felton Trophy at the Pennsylvania Golf Club in Llanerch, Pa. A total of 172 players participated in the tournament with President W. W. Atterbury of the Pennsylvania, E. C. Felton, director of the road, J. T. Davis, president of the club and H. B. Davis, chief clerk, accounting department, making up the first foursome. Of the remaining participants 50 were officers of the road while the balance were club members.

The cups were presented by President Atterbury and Director Felton, the Atterbury Trophy being for low net and the Felton Trophy for low gross score. The former was won by T. A. Canfield, clerk in the accounting department and the latter by Evan T. Watts, clerk in the mail and express department.

September Locomotive Shipments

September shipments of railroad locomotives, from principal manufacturing plants, based on reports received by the Department of Commerce, totaled 41 locomotives, as compared with 127 in September, 1927. The following table gives the shipments and unfilled orders of locomotives for September, 1927 and 1928, the 1927 totals and the totals for the first eight months of the two years:

RAILROAD LOCOMOTIVES Shipments					
Year and Month	Total	Domestic	Foreign	Steam	Electric
September	41	28	2	11	..
Total	41	28	2	11	..
(9 mos.)	435	285	87	61	2
1927	127	86	7	28	6
September	127	86	7	28	6
Total	127	86	7	28	6
(9 mos.)	838	573	116	136	13
Total	838	573	116	136	13
(year)	1,074	726	148	171	29
Unfilled orders, September					
Domestic Foreign					
Total	178	118	27	31	2
1928	271	167	49	40	15
1927	271	167	49	40	15

Roads With 75 Per Cent of Express Approve Purchase Plan

The plan under which eighty-six railroads propose to take over and operate express business of the country has been approved by companies doing 75 per cent of the express business of the country so

that now the four presidents empowered in the agreement to act, Messrs. Storey, Atterbury, Crowley, and Gray may proceed to definite negotiations with the American Railway Express Company. The plan was described in the *Railway Age* of July 21 and 28. The four presidents named will negotiate either to buy property and fixtures of express company or, under the alternate plan, buy one hundred per cent of stock of express company.

C. P. Operates Record Train

The longest and heaviest train load of grain ever moved by the Canadian Pacific was run recently between Stoughton and Arcola, in Southern Saskatchewan, a distance of 25 miles. The over-all length of the train was more than a mile. In their efforts to establish a record, Canadian Pacific officials enlisted the forces of nature, taking advantage of the heavy northwest gale to stage the record run. The train consisted of 135 loaded grain cars, each approximately 40 feet in length, a water car, a caboose and one engine. The gross weight of the loaded train was 8,725 tons and the contents of the string of cars amounted to total of 202,000 bushels.

Supply Officers Launch Contest

A contest for the best essay on subjects related to the purchasing and stores department activities of railroads has been launched by Division 6, Purchases and Stores, A. R. A. This contest will be similar to those held during the two years past, and is open to all employees in purchasing and stores departments below the rank of assistant purchasing agent or assistant general storekeeper. Contestants are given until March 1, 1929, to submit their papers, and the authors of the two best papers will be sent to the annual meeting of Division VI to present their papers in person. Articles must have at least 1,000 words and not more than 3,000 words, and are to be judged on the following basis: (a) 50 per cent on originality of subjects, ideas, conclusions and solutions of problems involved; (b) 25 per cent on general interest and importance of the subjects selected; (c) 20 per cent on conciseness and clearness of expression; (d) 5 per cent on general appearance and neatness. Four typewritten copies of each paper must be submitted,

which should be typed on one side of the paper only, using a black ribbon and providing a double space between lines. The top of the first page should carry the title of the paper, the full name of the author, his position, the employing railroad and the address. This year's judges will be H. C. Stevens, general storekeeper, Wabash, L. C. Thomson, manager of stores, Canadian National, and J. L. Bennett, purchasing agent, Central of Georgia. The papers must be submitted to W. J. Farrell, secretary, Division 6, A. R. A., 30 Vesey street, New York.

Train-Stop Installations Approved

Division 6 of the Interstate Commerce Commission has issued reports approving, with certain exceptions, the installation of the automatic train-stop device of the General Railway Signal Company on portions of the New Jersey, Lehigh, Wyoming and Seneca divisions of the Lehigh Valley, from Easton to Sayre, Pa., 214.4 miles, including the equipment of 207 locomotives and 7 motor cars; also the continuous induction type automatic train-stop device of the Union Switch & Signal Company on the Hartford division of the New York, New Haven & Hartford. The latter installation includes 27 locomotives equipped with the U. S. & S. device and also 29 which are equipped with the device of the G. R. S. company, so equipped as to function in connection with roadway equipment of the U. S. & S. company.

South Australian Builds New Station at Adelaide

The South Australian Railways have recently completed, and placed in operation a new stub-end passenger station at Adelaide, South Australia, which, with 495 train movements per day, handles 61,000 passengers. The station building, which also serves as headquarters for the railway at Adelaide and provides office space for 862 railway employees, is three stories in height, with tracks and platforms 19 ft. below the street level. Outside dimensions of the building are 371 ft. by 208 ft. The waiting hall is 70 ft. in height and the dining room, which is 90 ft. wide with an 18-ft. ceiling, has ample seating accommodations for 350 persons.

This new structure is the fourth station which has been erected on the same site. The first building was constructed in 1856. Owing to the growth of business, it was reconstructed and enlarged in 1878, again in 1900 and in 1925. Construction of the new facilities was carried on over the old site without interruption to the normal use of the old station by the public and was completed in July, 1928, at a cost, not including alterations to the track layout, of about \$2,500,000. In the new track layout, butterfly train sheds were substituted for arched canopies. Thirteen tracks serve seven island platforms at the car floor level.

Division VI Appoints Committees

Division VI, Purchases and Stores, A. R. A., of which C. C. Kyle, purchasing agent, Northern Pacific, is chairman, W. J. Farrell, secretary, and G. E. Scott, purchasing agent, Missouri-Kansas-Texas, chairman of committee appointments, has assigned the subjects for committee work during the year and determined upon the personnel of each committee. A committee on terminal storekeeping has been added to the list, bringing the number of active committees to 17. New chairmen have been appointed in all but one instance. The subjects assigned for committee action and the chairmen of each committee follow:

Stores Department Book of Rules—E. G. Ellenberger, general material supervisor, Penna., chairman;

Classification of Material—F. J. McMahon, general storekeeper, N. Y. C., chairman;

Reclamation of Discarded Material—Classification, Handling and Sale of Scrap—E. J. Becker, traveling storekeeper, S. P., chairman;

Joint Committee With Div. V on Reclamation—I. C. Bon, superintendent scrap and reclamation, Wabash, chairman;

Uniform Accounting and Material Store Expenses—C. H. Murrin, special accountant, I. C., chairman;

Forest Products—Paul McKay, assistant purchasing agent, N. P., chairman;

Buildings and Facilities for Handling Material—A. B. Lackey, division storekeeper, Southern, chairman;

Clayton Anti-Trust Act—E. A. Clifford, general purchasing agent, C. & N. W., chairman;



Platforms and Headhouse of New South Australian Railways Station at Adelaide

Control of Shop Orders—J. T. Kelly, general storekeeper, C. M. St. P. & P., chairman;

Control of Material—L. P. Krampf, supply agent, M. P., chairman;

Unit Pricing and Unit Piling—J. J. Kukis, superintendent of stores, Erie, chairman;

Purchasing Office Records and Organization, Including Price Index of Railroad Commodities—H. L. Taylor, assistant purchasing agent, C. N., chairman;

Stationery and Printing—E. J. Lamneck, assistant purchasing agent, Penna., chairman;

Fire Prevention—Q. A. Parker, division storekeeper, A. T. & S. F., chairman;

Delivery of Material—H. M. Smith, assistant general storekeeper, N. P., chairman;

Standardization and Simplification of Stores, Stocks and Disposition of Surplus Materials—L. V. Hyatt, supervisor of standardization, M. P., chairman;

Stores Department Safety Practices—F. A. Murphy, district storekeeper, B. & O., chairman;

Terminal Railway Storekeeping—E. H. Folk, district storekeeper, S. P., chairman;

Control of Line Stocks—W. R. Culver, general storekeeper, P. M., chairman;

Joint Committee on Metric System—J. W. Gerber, general storekeeper, Southern, chairman;

Nominating Committee—O. Nelson, general storekeeper, U. P., chairman;

Committee on Committees—G. E. Scott, purchasing agent, M-K-T., chairman.

Cause of Times Square Wreck

The cause of the disastrous derailment on the Interborough Rapid Transit subway, at Times Square, New York City, on August 24, when 16 passengers were killed and over 100 injured, appears to have been discovered. The facing point switch at which the train was wrecked, was wrongfully moved under the next to the last car in the moving train. At the time the report was printed in the *Railway Age* (September 1, page 430) both the officers of the road and the representatives of the state of New York, appeared to be in doubt as to whether there was a fault in the switch, or some mistake on the part of the maintainer who, with his helper, was standing near the switch; or some fault in the signal cabin. The maintainer was held for trial, on a charge of homicide, but has now been set free.

The signalman in the cabin, Harry C. King, was a temporary or substitute man (employed mainly as a train clerk) and investigations made by the railway company threw suspicion on him; he has now been held in \$20,000 bail to appear before the grand jury. Magistrate Corrigan, who heard the case, made a statement saying that he was forced to the conclusion that the switch was moved by some one in the signal cabin, who had used the emergency release to free the switch lever from the track-circuit lock; that the only persons in the cabin were King and Motorman O'Connor, and that King had

sworn that O'Connor did not touch any lever. "If O'Connor did not move the lever, King did," says the judge. King had given false testimony at hearings; his true name is not King, but Stocksdale; he was not born at the place where he said he was; he was convicted in Baltimore of stabbing a man with a butcher knife. The judge said that he was forced to the conclusion that, in defiance of the order of Maintainer Baldwin, King moved the lever and caused the wreck.

Strike of Railway Express Employees in New York

Clerks, freight handlers and other station employees of the American Railway Express Company in New York, Jersey City, and other terminals in the vicinity left their places suddenly without notice on Tuesday night, October 9, causing general suspension of business. The express company at once placed an embargo both to and from New York. It was said that several hundred cars of perishable freight were left unhandled. According to strikers seven thousand or more men were out but officers of company stated the number was much smaller. Officers of the company said no notice had been given and that they knew of no definite cause for the strike. They said that the number of actual strikers was very small and that other employees had left work because of fear or excitement. Strikers are members of Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, and the most tangible statement of cause of strike is that this brotherhood and a teamsters union in New York City are disputing as to which of the two shall be leader among employees of the express company. George M. Harrison, Grand President Clerks Brotherhood, telegraphed from Cincinnati that the strike was unauthorized and indications are that it will be short lived.

Revenues and Expenses For August

Class I railroads in August had a net railway operating income of \$128,350,136 which, for that month, was at the annual rate of 5.04 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In August, 1927, the net railway operating income was \$118,822,710, or 4.77 per cent.

Operating revenues amounted to \$557,693,108, as compared with \$557,666,763 in August, 1927. Operating expenses totaled \$383,787,140, a decrease of 2.4 per cent.

Class I railroads in August paid \$35,208,226 in taxes, a decrease of five-tenths of one per cent under the total for the same month in 1927. This brought the total tax bill of the Class I railroads for eight months to \$249,710,048, a decrease of \$2,393,630 or nine-tenths of one per cent below that for the corresponding period in 1927.

Sixteen Class I railroads operated at a loss in August, of which 6 were in the Eastern district, three in the Southern, and seven in the Western.

For eight months the net railway operating income amounted to \$685,588,012, at the rate of 4.47 per cent. During

the corresponding period of 1927, the net was \$676,826,176, or 4.52 per cent.

Operating revenues for eight months amounted to \$3,977,963,495, a decrease of 2.8 per cent. Operating expenses totaled \$2,965,275,064, a decrease of 4 per cent.

Net railway operating income by districts for the first eight months with the percentage of return based on property investment on an annual basis was as follows:

New England Region	\$25,760,015	4.42 per cent
Great Lakes Region	126,033,031	4.75 per cent
Central Eastern Region	155,403,380	4.74 per cent
Pocahontas Region	46,163,977	6.77 per cent
Total Eastern Dist.	353,360,403	4.91 per cent
Total Southern Dist.	81,245,085	4.07 per cent
Northwestern Region	73,113,133	3.78 per cent
Centralwestern Region	117,500,056	4.08 per cent
Southwestern Region	60,369,335	4.53 per cent
Total Western Dist.	250,982,524	4.08 per cent
UNITED STATES	685,588,012	4.47 per cent

The net railway operating income of the Class I railroads in the Eastern district for eight months totaled \$353,360,403, which was at the annual rate of 4.91 per cent, as compared with \$368,390,951, or 5.23 per cent, for the corresponding period of last year. Operating revenues totaled \$1,967,450,898, a decrease of 5 per cent, while operating expenses totaled \$1,458,632,567, a decrease of 5.7 per cent. For August the Eastern roads had a net railway operating income of \$61,243,676, compared with \$60,092,053 in August, 1927.

In the Southern district for the eight months the net railway operating income was \$81,245,085, at the rate of 4.07 per cent. For the same period in 1927 their net railway operating income amounted to \$90,474,846 which was at the annual rate of 4.66 per cent. Gross operating revenues of the Class I railroads in the Southern District for the first eight months in 1928 amounted to \$51,057,219, a decrease of 6.5 per cent under the same period the year before while operating expenses totaled \$392,194,085, a decrease of six per cent.

The net railway operating income of the Class I railroads in the Southern District in August totaled \$10,574,197, while in the same month in 1927 it was \$12,084,619.

Class I railroads in the Western district for eight months had a net railway operating income of \$250,982,524, at the rate of 4.08 per cent. For the first eight months in 1927, they had a net of \$217,960,379, or 3.63 per cent. Operating revenues for the eight months amounted to \$1,499,455,378, an increase of 1.7 per cent, while operating expenses totaled \$1,114,448,412, a decrease of nine-tenths of one per cent. For August, the net of the Class I railroads in the Western district amounted to \$56,532,263, as compared with \$46,646,038 in August, 1927.

CLASS I RAILROADS—UNITED STATES	Month of August	1928	1927
Total operating revenues	\$557,693,108	\$557,666,763	
Total operating expenses	383,787,140	393,403,611	
Taxes	35,208,226	35,398,500	
Net railway operating income	128,350,136	118,822,710	
Operating ratio—per cent	68.82	70.54	

(Continued on page 738)

Revenues and Expenses of Railways

MONTH OR AUGUST AND EIGHT MONTHS OR CALENDAR YEAR 1928

Av. mileage operated during period.	Name of road		Operating expenses										Net from railway operation.		Net rev. operating income, 1927.	
	Operating revenues		Maintenance of Equipment					Trans. portation.			Operating ratio.		Operating income (or loss).			
	Freight.	Passenger. (inc. misc.)	Way and structures.	Traffic.	General.	Total.	Trans. portation.	General.	Total.	Operating ratio.	Operating income (or loss).	Operating income (or loss).	Operating income (or loss).	Operating income (or loss).		
Akron, Canton & Youngstown	\$3,366,142	\$521	\$59,836	\$12,877	\$11,650	\$119,441	\$12,781	\$13,650	\$140,901	\$44.05%	\$121,149	\$86,491	\$521,775	\$72,116		
171	324,408	1,146,144	2,233,117	1,425,534	1,014,449	59,941	1,13,522	1,46,524	55,4	772,488	66,653	439,052	35,779			
171	2,071	3,190,440	3,405,224	3,554,958	4,97,816	391,678	12,22,886	62,3	706,378	5,665,275	5,665,275	5,665,275	5,665,275	3,665,275		
171	2,146,144	3,013,616	19,634,964	1,004,511	1,305,265	2,392,759	1,46,524	1,22,715	12,22,886	1,13,522	1,22,715	1,22,715	1,22,715	1,22,715		
9,428	151,378,87	24,141,837	10,50,563	26,395,021	3,20,476	38,921,044	3,283,572	96,33,976	73,8	34,165,247	23,746,920	23,746,920	23,746,920	23,746,920	23,746,920	
Gulf, Colorado & Santa Fe	1,944	14,505,395	226,672,94	17,162,676	3,194,480	5,41,163	52,700	5,795,524	572,272	13,658,341	69,6	350,368	630,564	521,775	521,775	
Panhandle & Santa Fe	1,023	1,063,284	1,14,564	1,260,535	3,227,656	1,82,129	10,522	5,293,308	28,540	521,088	58,7	2,763,932	1,654,725	2,950,119	2,950,119	
1,023	6,945,521	859,289	8,415,058	2,166,025	1,73,152	98,996	2,51,158	6,538,892	77,7	1,875,166	1,587,474	877,561	1,587,474	1,587,474	1,587,474	
Atlanta & West Point	93	1,301,013	170,284	57,720	2,055,695	35,226	49,662	12,854	97,257	13,521	42,907	32,356	11,127	58,213		
Western of Alabama	133	216,023	466,727	2,016,978	262,313	99,648	73,2	105,595	1,574,294	78,1	442,684	322,026	197,754	227,844		
133	1,525,075	5,456,325	56,973	295,588	36,802	51,473	12,633	84,038	200,733	68,6	72,855	79,184	80,941	60,078		
Atlanta, Birmingham & Coast	639	357,724	37,948	96,166	82,406	20,274	15,820	1,282,280	123,810	3,12,863	96,5	113,157	21,209	20,994		
8,415,135	2,347,607	288,855	3,226,020	708,154	1,26,494	1,19,964	1,89,212	1,89,212	1,89,212	1,89,212	1,89,212	1,89,212	1,89,212	1,89,212		
8,415,135	3,457,314	4,625,446	4,625,446	7,533,420	10,161,124	1,42,94,916	1,71,37,464	1,45,070	38,307,097	78,3	10,621,328	6,807,046	6,622,036	8,479,416		
Charleston & Western Carolina	342	2,009,923	103,011	2,186,949	4,42,575	37,42,16	40,313	59,324	292,153	55,672	1,74,047	79,0	38,600	37,694	55,951	
Baltimore & Ohio	5,637	18,43,135	2,180,513	2,709,323	3,17,316,5	3,17,316,5	3,17,316,5	3,17,316,5	3,17,316,5	3,17,316,5	3,17,316,5	3,17,316,5	3,17,316,5	3,17,316,5	3,17,316,5	
Baltimore & Ohio Chicago Terminal	87	8,400,923	8,400,923	8,400,923	8,400,923	8,400,923	8,400,923	8,400,923	8,400,923	8,400,923	8,400,923	8,400,923	8,400,923	8,400,923	8,400,923	
Staten Island Rapid Transit	87	112,480	150,102	2,885,646	315,586	15,535	17,370	1,431,960	1,31,946	1,16,984	59,8	143,284	87,016	745,227		
87	86,487	1,022,100	2,091,211	261,834	158,491	17,503	663,551	1,43,22,21	1,43,22,21	1,43,22,21	1,43,22,21	1,43,22,21	1,43,22,21	1,43,22,21	1,43,22,21	
Bangor & Aroostook	613	305,372	44,436	377,299	113,403	115,330	47,133	1,21,0190	199,555	3,25,063	67,7	1,553,936	1,171,334	1,277,838		
Belt Ry. Co. of Chicago	32	4,135,860	470,242	4,809,972	890,410	73,025	73,080	3,899	313,810	4,30,300	64,7	2,16,632	1,21,468	1,143,608		
32	32	5,312,860	5,312,860	5,312,860	5,312,860	5,312,860	5,312,860	5,312,860	5,312,860	5,312,860	5,312,860	5,312,860	5,312,860	5,312,860	5,312,860	
Bessemer & Lake Erie	224	1,928,475	11,022	1,960,321	13,957	331,141	14,220	377,083	35,281	85,0129	43,4	1,110,192	975,861	957,694		
Bingham & Garfield	225	9,713,432	31,225	9,942,943	913,519	8,247	8,247	11,588	2,42,261	21,837	62,5	3,74,606	3,17,521	2,564,314		
33	40,060	40,060	40,060	41,51,513	4,74,759	4,74,759	4,74,759	10,307	10,432	82,9	10,432	82,9	10,432	10,432		
Boston & Maine	2,112	4,361,076	1,706,036	6,866,206	1,246,452	8,65,521	8,65,521	8,65,521	8,65,521	8,65,521	8,65,521	8,65,521	8,65,521	8,65,521		
2,112	32,54,290	11,13,684	49,802,430	7,589,428	8,65,521	6,22,3	10,444	4,537	334,244	61,318	61,5	38,951	32,732	29,407		
111,651	9	945,623	945,623	945,623	981,087	72,593	100,444	4,537	334,244	61,318	61,5	38,951	32,732	29,407		
Brooklyn Eastern Dist. Terminal	233	94,486	33,228	140,476	29,478	27,257	5,493	62,983	4,51,53	127,556	72,9	10,732	3,248	45,438		
233	1,350,986	1,003	1,026,055	217,086	40,542	1,816	40,542	39,612	70,252	34,189	89,1	186,566	187,905	122,830		
233	956,940	10,099	1,026,055	217,086	40,542	1,816	40,542	39,612	70,252	34,189	89,1	186,566	187,905	122,830		
233	1,291,302	92,846	1,448,843	248,922	326,062	28,154	534,249	52,484	1,18,016	93,9	62,771	144,635	144,635	144,635		
601	10,120,602	626,093	1,347,260	1,10,183	2,70,072	23,037	4,21,075	4,21,075	32,90,72	153,4	2,06,236	1,808,392	1,808,392	1,808,392		
601	85	832,677	325,654	1,347,260	94,172	2,70,072	23,037	4,21,075	4,21,075	32,90,72	153,4	2,06,236	1,808,392	1,808,392		
Canadian Pacific Lines in Maine	1,911	12,514,432	2,329,697	16,716,753	2,141,316	3,002,411	3,21,763	377,642	74,529	642,025	70,3	396,105	266,122	289,030		
1,911	12,514,432	2,329,697	16,716,753	2,141,316	3,002,411	3,21,763	377,642	74,529	642,025	70,3	396,105	266,122	289,030			
Central New Jersey	870	2,055,255	1,030,254	5,401,558	3,004,190	9,21,438	6,22,438	6,22,438	6,22,438	6,22,438	6,22,438	6,22,438	6,22,438	6,22,438		
870	4,095,255	1,030,254	5,401,558	3,004,190	9,21,438	6,22,438	6,22,438	6,22,438	6,22,438	6,22,438	6,22,438	6,22,438	6,22,438	6,22,438		
Central Vermont	401	631,893	134,723	838,268	2,765,999	101,768	19,658	23,678	6,25,522	1,16,603	89,1	121,861	106,673	87,051		
401	389	3,614,532	503,574	4,609,753	2,765,233	8,38,347	1,24,712	1,24,712	1,24,712	1,24,712	1,24,712	1,24,712	1,24,712	1,24,712		
401	2,770	9,909,548	11,004,511	1,508,636	2,329,755	1,12,505	1,22,715	1,22,715	1,22,715	1,22,715	1,22,715	1,22,715	1,22,715	1,22,715		
401	2,770	72,809,575	4,818,205	80,659,836	11,126,510	18,979,539	1,058,205	21,668,613	2,20,61,512	55,788,958	69,1	24,970,878	16,779,859	16,779,859		
Chicago & Illinois Midland	1028	1,929,091	5,012,127	5,467,489	573,402	5,493	5,493	5,493	5,493	5,493	5,493	5,493	5,493	5,493		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644	2,353,853	2,337,752	4,12,408	646,510	7,048,226	584,973	7,048,226	584,973	7,048,226	7,048,226	7,048,226	7,048,226		
1028	13,014,461	3,265,644														

RAILWAY AGE

Revenues and Expenses of Railways

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road	Av. mileage operated during period.			Operating revenues			Operating expenses			Net from railway operation.			Net rev. operating income, 1927.		
	Freight.	Passenger.	Total, inc. misc.	Way and equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Operating income (or loss).	Net rev. operating income.	Net rev. operating income.			
Fort Smith & Western	\$103,852	\$10,634	\$121,352	\$26,009	\$5,571	\$42,635	\$6,810	\$101,838	85.6	\$17,514	\$11,943	—\$616	—7,833		
Galveston Wharf	790,471	76,664	920,443	211,515	47,443	34,093	4,516	83,642	54.3	83,941	51,515	—49,799	—17,516		
Georgia R. R.	19	13	1,318,772	359,680	37,140	26,999	216,105	37,726	760,450	57.7	558,342	373,342	—9,955	—9,532	
Georgia & Florida	8 mos.	8 mos.	328	353,702	73,205	454,979	40,048	87,576	* 23,102	23,241	81.5	84,294	75,545	90,212	
Georgia & Florida	8 mos.	8 mos.	328	2,738,579	493,342	3,468,933	372,540	680,337	1,866,922	1,514,305	2,39,363	56,620	45,364	56,388	
Georgia & Florida	8 mos.	8 mos.	328	1,937,713	145,598	2,165,132	36,271	26,729	10,527	62,532	68,100	68,886	59,859	55,323	
Georgia & Florida	8 mos.	8 mos.	328	948,471	102,392	1,113,533	171,999	160,336	73,856	429,025	65,946	900,933	80.9	150,886	
Grand Trunk Western	Aug. 8 mos.	Aug. 8 mos.	345	1,780,335	243,054	2,098,005	302,220	341,539	349,013	613,606	1,377,674	65.5	224,329	63,275	
Atlantic & St. Lawrence	Aug. 8 mos.	Aug. 8 mos.	345	12,547,662	1,495,045	14,739,481	1,810,778	3,021,224	51,315	6,290	5,556	10,340,386	72.9	3,999,095	2,389,495
Chic. Det. & Canada Gr. Tr.	Aug. 8 mos.	Aug. 8 mos.	345	35,535	51,335	86,870	295,916	295,916	47,487	989,887	7,433	201,199	92.5	16,316	
Detroit, Grand Haven & Mil. Tr.	Aug. 8 mos.	Aug. 8 mos.	345	765,678	2,583,834	3,141,000	101,669	125,191	38,398	756,268	32,616	1,053,805	40.8	1,530,031	
Great Northern	Aug. 8 mos.	Aug. 8 mos.	345	9,408,627	2,475	11,723,502	12,641	13,061	4,846	97,740	3,862	1,321,150	40.8	1,50,955	
Green Bay & Western	Aug. 8 mos.	Aug. 8 mos.	345	5,556,659	211,246	6,199,232	813,767	499,999	10,192	2,239,890	19,161	1,512,699	110.0	—17,801	
Gulf & Ship Island	Aug. 8 mos.	Aug. 8 mos.	345	1,733,350	324,243	1,817,083	11,033,239	12,549,264	1,963,141	24,666,318	1,899,778	52,370,446	72.9	19,441,566	
Gulf, Mobile & Northern	Aug. 8 mos.	Aug. 8 mos.	345	1,310,941	4,575	13,430,000	23,189	6,143	14,040	2,38,428	3,143,443	22,376	80.1	1,40,462	
Hocking Valley	Aug. 8 mos.	Aug. 8 mos.	348	1,816,263	66,326	2,100,922	206,025	334,722	16,699	524,270	41,487	1,123,189	53.5	1,512,765	
Illinois Central	Aug. 8 mos.	Aug. 8 mos.	348	1,709,13	1,856,981	2,319,558	2,297,395	3,69,635	48,294	5,547	98,498	7,458	232,636	92.5	
Illinois Central System	Aug. 8 mos.	Aug. 8 mos.	348	6,768,288	7,618,102	11,033,239	12,549,264	1,963,141	2,38,428	3,143,443	22,376	80.1	1,40,462	1,49,900	
Yazoo & Mississippi Valley	Aug. 8 mos.	Aug. 8 mos.	348	1,709,13	1,856,981	2,319,558	2,297,395	3,69,635	48,294	5,547	98,498	7,458	232,636	92.5	
Kansas City, Mexico & Orient	Aug. 8 mos.	Aug. 8 mos.	348	2,000,546	49,872	2,119,821	1,466,713	1,466,713	2,692,678	2,62,424	3,62,424	362,477	6,496,378	8,381,629	
Kansas City, Mex. & Orient of Tex.	Aug. 8 mos.	Aug. 8 mos.	348	1,340,048	15,993	1,368,986	—1,79,443	395,125	21,372	4,53,364	4,53,364	9,661,800	78.3	2,679,773	
Kansas City Southern	Aug. 8 mos.	Aug. 8 mos.	348	3,362,169	312,580	3,807,947	—43,114	661,311	78,999	1,082,339	95,661	1,460,710	78.2	21,659,565	
Lehigh & New England	Aug. 8 mos.	Aug. 8 mos.	348	1,346,223	107,652	1,408,921	2,621,891	2,290,976	2,465,996	42,540,129	3,394,235	91,653,103	78.9	24,535,271	
Texarkana & Ft. Smith	Aug. 8 mos.	Aug. 8 mos.	348	10,052,565	1,205,539	1,408,921	2,051,655	1,360,615	3,00,667	5,406,939	42,540,129	3,394,235	91,653,103	78.9	
Kansas, Oklahoma & Gulf	Aug. 8 mos.	Aug. 8 mos.	348	2,297,788	3,247	2,96,244	44,170	23,107	10,558	58,792	9,690	1,32,732	67.1	1,66,455	
Lake Superior & Ishpeming	Aug. 8 mos.	Aug. 8 mos.	348	1,921,152	23,993	1,984,879	550,250	199,171	89,063	522,175	82,241	1,30,677	64,177	1,512,765	
Lake Terminal	Aug. 8 mos.	Aug. 8 mos.	348	1,367,510	13,194	1,576,199	44,761	24,732	4,212	66,243	8,405	144,608	39,211	1,512,765	
Lehigh & Hudson River	Aug. 8 mos.	Aug. 8 mos.	348	2,155,996	1,656	1,22,067	17,223	17,549	****	58,968	1,699	95,439	78.2	22,303	
Lehigh & New England	Aug. 8 mos.	Aug. 8 mos.	348	1,21,300	1,21,300	1,22,067	125,254	158,413	35,078	40,816	1,418	70,745	11,348	—1,021	
Louisiana Ry. & Nav. Co.	Aug. 8 mos.	Aug. 8 mos.	348	1,364,364	37,763,390	4,711,480	46,060,897	4,782,094	1,088,136	1,172,580	1,172,580	1,172,580	1,172,580	1,172,580	1,172,580
Louisiana Ry. & Arkansas	Aug. 8 mos.	Aug. 8 mos.	348	2,346,635	80,515	12,805	326,276	49,076	49,905	11,569	77,049	11,866	126,891	98,483	
Louisiana Ry. & Nav. Co.	Aug. 8 mos.	Aug. 8 mos.	348	2,012,700	84,946	2,193,919	46,311	27,574	27,574	1,04,807	86,919	87,838	1,766,748	81,4	
Louisiana Ry. & Nav. Co.	Aug. 8 mos.	Aug. 8 mos.	348	2,012,700	84,946	2,193,919	46,311	27,574	27,574	1,04,807	86,919	87,838	1,766,748	81,4	
Louisiana Ry. & Nashville	Aug. 8 mos.	Aug. 8 mos.	348	610,785	18,492,357	11,560,900	19,413,782	20,066	17,814	2,810	35,095	5,350	81,135	—1,432	
Louisville & Nashville	Aug. 8 mos.	Aug. 8 mos.	348	5,077	72,622,168	11,800,618	89,744,422	13,890,071	20,7,22,097	1,958,920	31,688,166	2,846,160	79,73	18,212,314	
Louisville, Henderson & St. Louis	Aug. 8 mos.	Aug. 8 mos.	348	1,673,145	199	1,988,01	46,366	262,978	42,688	49,875	8,911	96,160	215,766	82.0	
Louisville, Henderson & St. Louis	Aug. 8 mos.	Aug. 8 mos.	348	335,746	2,152,946	42,656	382,717	68,704	821,800	94,599	1,807,289	83.9	345,657	239,445	

Revenues and Expenses of Railways

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1928—CONTINUED

Av. mileage operated during period.	Operating revenues—		Operating expenses—						Net from railway operation.	Operating income (or loss).	Net ry. operating income, 1927.		
	Freight.	Pasenger. (inc. misc.)	Total	Maintenance of Way and structures.	Equip- ment	Traffic.	Trans- porta- tion.	General.	Total	Operating ratio.			
Maine Central Aug. 1,122 \$1,113,526 \$1,669,067 \$2,782,593	\$376,436	\$1,669,067	\$1,669,067	\$627,341	\$19,245	\$627,341	\$61,172	\$1,313,341	78.7	\$35,726	\$242,639		
8 mos. 1,122 9,400,322 2,332,542 12,916,163	2,010,887	2,455,578	3,337,314	129,993	5,064,559	1,455,578	418,031	10,086,053	77.9	1,975,118	\$233,962		
Midland Valley Aug. 364 3,352,213 13,751 37,077,892	5,232	5,322	5,322	727,553	12,272	727,553	101,717	1,403,321	48.7	188,670	1,760,103		
Minneapolis & St. Louis Aug. 8 mos. 364 2,220,696 127,432 2,419,985	3,569,795	275,414	3,569,795	62,623	610,554	62,623	101,717	1,403,321	58.0	1,016,664	146,437		
Minneapolis, St. Paul & S. S. Mar. & Aug. 4,385 3,436,746 8 mos. 4,385 3,436,746	580,925	1,527,016	1,527,016	1,911,320	285,017	4,367,389	351,091	4,367,389	81.2	885,854	124,881		
Duluth, South Shore & Atlantic Aug. 8 mos. 573 3,533,336 68,348 3,601,684	477,023	3,463,663	3,463,663	674,179	55,794	63,590	1,457,085	88,488	92.8	595,619	337,525		
Spokane International Aug. 165 1,317,252 801,553 83,829	14,017	156,388	10,233	10,233	3,719	3,719	51,041	6,215	48.8	80,136	66,343		
Mississippi Central Aug. 8 mos. 165 662,700 662,700	127,484	2,351	2,351	28,096	253,521	28,096	51,041	541,697	67.6	259,756	215,594		
Missouri & North Arkansas Aug. 8 mos. 165 89,903 89,903 89,903	113,671	137,937	137,937	136,853	18,067	9,205	54,619	129,758	94.6	61,159	47,729		
Missouri-Kansas-Texas Lines Aug. 8 mos. 165 1,501,575 1,501,575	1,501,027	158,027	158,027	158,027	76,973	445,797	66,651	990,594	94.1	39,985	—52,925		
Missouri Pacific Aug. 8 mos. 165 7,436 68,395,278 9,141,820	562,197	4,295,004	4,295,004	876,488	22,985	9,885	39,556	7,398	66.8	50,384	39,795		
Gulf Coast Lines Aug. 8 mos. 318 1,319,582 1,219,882 1,219,882	1,014,348	1,104,003	1,104,003	167,104	179,564	75,047	63,971	776,490	71.0	317,603	249,155		
International-Great Northern Aug. 8 mos. 318 1,159 9,233,973 1,448,283 1,448,283	1,159,314	1,354,722	1,354,722	16,269,819	2,207,293	287,206	3,814,580	3,627,152	72.0	2,370,462	2,865,876		
San Antonio, Uvalde & Gulf Aug. 8 mos. 318 1,737,506 1,737,506	1,518,865	3,466,567	3,466,567	4,717,181	6,680,907	916,368	1,092,992	1,306,978	3,382,999	69,82	10,704,383	8,687,368	
Texas & Pacific Aug. 8 mos. 318 1,319,582 1,219,882 1,219,882	1,014,348	1,104,003	1,104,003	167,104	1,904,152	1,715,831	340,515	2,949,467	7,168,871	62,1	1,316,036	1,957,702	
Mobile & Ohio Aug. 8 mos. 318 1,319,582 1,219,882 1,219,882	1,014,348	1,104,003	1,104,003	167,104	1,904,152	1,715,831	340,515	2,949,467	7,168,871	62,1	1,316,036	1,957,702	
Monongahela Aug. 8 mos. 171 4,547,265 4,547,265	125,125	4,156,200	4,156,200	79,174	88,089	88,089	1,340,565	347,770	63,850	2,571,459	54.6	2,116,036	2,593,939
Monongahela Connecting Aug. 8 mos. 171 26,171,505 26,171,505	3,915,868	4,999,563	4,999,563	5,233,299	63,793	63,793	883,908	20,575,653	883,908	10,277,929	8,776,803	1,147,356	
Montour Aug. 8 mos. 56 161,581 161,581	27	1,037,640	1,037,640	169,391	331,934	9,676	238,679	54,552	77.1	237,175	429,489	252,806	
Nashville, Chattanooga & St. Louis Aug. 8 mos. 171 617,453 617,453	12,392	1,255,325	1,255,325	1,75,000	75,000	87,112	446,660	326,277	60,335	141,900	70.0	60,839	57,187
Nevada Northern Aug. 8 mos. 171 579,454 579,454	41,408	685,130	685,130	105,472	67,648	7,745	1,197,694	85,263	80,400	329,340	239,043	117,335	
New Orleans Terminal Aug. 8 mos. 276 1,259 1,662,056 1,662,056	273,788	2,082,673	2,082,673	314,367	43,827	448,151	60,598	1,050,066	67.1	512,274	484,740	1,522,766	
New York Central Aug. 8 mos. 276 1,259 1,649,496 1,649,496	2,277,103	4,834	4,834	104,697	79,174	70,155	1,340,565	347,770	63,850	2,116,036	629,411	4,166,495	
Cincinnati Northern Aug. 8 mos. 276 1,250,375 1,250,375	2,020,3	2,026,765	2,026,765	337,312	40,463	12,479	1,167	1,179,383	65.3	2,138,597	1,963,607	1,558,279	
New Orleans Terminal Aug. 8 mos. 276 1,915,149 1,915,149	160,355	2,144,292	2,144,292	302,686	345,624	10,749	663,468	35,396	336,169	49.1	348,961	237,380	202,621
Indiana Harbor Belt Aug. 8 mos. 130	1,022	1,145,220	1,145,220	21,209	9,452	341,712	537,116	4,31,309	1,063,939	75.8	49,212	35,525	30,102
Michigan Central Aug. 8 mos. 1,858 4,179,152 4,179,152	3,377,725	2,49,41,002	32,978,032	53,380,284	3,624,029	3,624,029	87,047,704	9,110,685	190,088,482	72.3	3,170,691	485,902	273,730
Pittsburgh & Lake Erie Aug. 8 mos. 231 1,818,527 1,818,527	2,111,738	2,719,970	2,719,970	3,18,722	4,33,097	11,179,383	1,45,319	1,136,655	25,55,371	75.1	3,170,691	2,608,203	2,590,406
New York, Chicago & St. Louis Aug. 8 mos. 1,690 4,190,783 4,190,783	1,99,761	4,537,373	4,537,373	202,380	6,50,875	12,619,263	1,224,048	21,954,800	45,146,307	76.2	59,405,525	42,088,759	40,069,895
Cleveland Aug. 8 mos. 1,690 3,258,727 3,258,727	1,205,980 3,455,1,370	4,574,315	6,594,696	1,018,093	12,314,932	1,131,433	4,367,297	73.9	9,019,713	5,346,528	6,307,410	4,322,885	

Revenues and Expenses of Railways

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues			Operating expenses			Net from railway operation, (or lease)	Net operating income, 1927.
		Maintenance of equipment	Way and structures	Traffic	Transportation	General	Total		
N. Y., New Haven & Hartford	2,146	\$6,616,663	\$4,071,327	\$11,808,649	\$1,080,371	\$1,958,636	\$99,161	\$3,636,755	\$2,857,116
N. Y., New Haven & Hartford	2,134	48,864,737	30,796,399	39,285,014	1,318,035	16,563,699	773,662	29,372,210	\$2,663,413
New York Connecting	20	216,377	244,675	1,645,847	1,291,431	1,645,847	11,623	1,645,847	15,381,809
Norfolk & Western	20	1,508,388	1,805,266	193,236	98,841	12,955,355	10,407,276	17,452,741	8,167
New York, Ontario & Western	569	802,785	644,747	1,648,065	263,571	224,861	18,382	567,278	66,2
Norfolk & Western	569	1,216,663	1,216,663	1,216,663	1,216,663	1,216,663	1,216,663	1,216,663	20,590,718
Norfolk & Western	569	8,249,093	5,442,751	9,073,575	1,291,431	1,291,431	1,291,431	1,291,431	16,240,902
Norfolk & Western	569	48,506,885	3,845,460	67,586,715	9,350,635	9,350,635	9,350,635	9,350,635	8,167
Norfolk Southern	931	625,263	58,676	732,564	100,617	103,648	28,290	277,819	73,8
Northern Pacific	931	6,181,149	3,408,631	9,137,259	1,694,453	1,694,342	184,231	223,537	66,2
Northern Pacific	931	7,257,131	1,038,330	9,137,259	1,755,036	1,755,036	21,288,816	249,506	25,409,02
Northwestern Pacific	477	1,216,663	1,216,663	1,216,663	1,216,663	1,216,663	1,216,663	1,216,663	1,216,663
Pennsylvania R. R.	477	10,485	40,306,265	29,3,629,314	87,872,238	420,697,209	5,423,558	277,473	4,059,945
Pennsylvania R. R.	477	1,216,663	1,216,663	1,216,663	1,216,663	1,216,663	1,216,663	1,216,663	1,216,663
Baltimore, Chesapeake & Atlantic	130	97,593	57,078	162,898	20,810	12,075	2,315	30,365	136,915
Long Island	130	607,519	228,864	895,019	100,896	449,705	15,684	1,048,907	12,677
Pere Marquette	130	1,194,669	2,801,485	3,922,52	404,454	426,888	35,807	1,396,328	1,133,922
Pittsburgh & Shawmut	130	7,409,434	17,833,355	26,812,387	3,406,348	3,816,662	278,833	10,789,726	80,178
West Jersey & Seashore	370	97,593	870,593	1,322,585	126,199	150,551	3,614	239,477	1,133,922
Peoria & Pekin Union	19	3,154,407	3,721,594	7,228,022	1,025,32	1,030,132	3,211,859	1,76,242	2,448,595
Peoria & Pekin Union	19	1,519	1,519	1,519	1,519	1,519	1,519	1,519	1,883,436
Pere Marquette	19	1,296,667	1,296,667	1,296,667	1,296,667	1,296,667	1,296,667	1,296,667	1,296,667
Pittsburgh & West Virginia	19	2,244	3,882,111	3,777,829	4,523,610	4,98,357	64,158	1,304,389	1,133,922
Pittsburgh & West Virginia	19	2,532,265	2,061,766	29,112,339	3,386,352	6,035,442	512,975	9,709,940	1,133,922
Pittsburgh, Shawmut & Northern	19	1,240,840	32,014	148,730	26,098	31,232	4,27,716	6,324	1,133,922
Quincy, Omaha & Kansas City	19	4,199,418	5,199,418	7,74,800	11,016,906	803,809	18,961,000	1,639,959	1,133,922
Reading	19	1,238,323	15,634	1,279,003	165,994	274,157	14,623	52,875	1,133,922
Reading	19	1,238,323	15,634	1,238,323	15,634	1,238,323	15,634	1,238,323	1,133,922
Atlantic City	92	383,799	4,904	419,549	27,068	78,609	15,522	68,412	2,289
Perkiomen	92	2,562,755	43,275	2,855,154	174,202	557,537	121,405	52,938	1,133,922
Reading	92	1,654,301	1,893	1,716,626	48,319	248,621	13,594	403,358	1,133,922
Port Reading	92	6,333,081	6,333,081	6,333,081	6,333,081	6,333,081	6,333,081	6,333,081	1,133,922
Richmond, Fredericksburg & Potowmac	117	48,337	8,863	63,629	27,277	5,973	703	2,732,703	1,133,922
Richmond, Fredericksburg & Potowmac	117	352,911	72,235	302,173	67,316	5,984	1,307,706	1,133,922	1,133,922
Richmond, Fredericksburg & Potowmac	117	1,509,270	7,351,585	1,069,551	1,698,881	94,313	2,690,435	1,133,922	1,133,922
Rutland	117	1,509,270	5,288,535	57,451,458	7,935,504	13,338,952	698,666	21,805,853	1,133,922
Rutland	117	1,533,712	252,310	771,797	124,823	1,034,371	10,068	3,03,303	1,133,922
St. Louis Southwestern	117	1,188,132	1,188,132	1,188,132	1,188,132	1,188,132	1,188,132	1,188,132	1,133,922
St. Louis, San Francisco & Texas	117	3,744,211	2,531,591	7,603,525	894,303	1,309,302	78,119	2,684,304	2,289,322
St. Louis, San Francisco & Texas	117	3,844,212	1,024,223	1,158,284	1,158,284	1,158,284	1,158,284	1,158,284	1,133,922
Ft. Worth & Rio Grande	117	1,215,745	10,059	97,352	1,415,138	196,295	3,062	45,151	1,133,922
St. Louis Southwestern	117	3,33,540	126,552	617,955	4,545,460	912,275	1,818,287	14,685	1,133,922
St. Louis, San Francisco & Texas	117	3,33,540	1,216,644	1,216,644	1,216,644	1,216,644	1,216,644	1,216,644	1,133,922
St. Louis, San Francisco & Texas	117	6,109,212	7,671,436	950,590	1,418,194	118,666	2,296,337	22,407	1,133,922
St. Louis, San Francisco & Texas	117	7,741,621	53,284,452	6,764,388	10,638,794	997,213	18,003,202	1,856,406	1,133,922
St. Louis Southwestern	233	73,862	10,059	97,352	1,415,138	196,295	28,178	18,328	1,133,922
St. Louis Southwestern	233	609,541	93,313	802,028	161,184	165,342	27,416	420,833	1,133,922
St. Louis, San Francisco & Texas	233	1,74,077	11,589	192,977	39,979	27,834	5,031	57,779	1,133,922
St. Louis, San Francisco & Texas	233	1,024,223	91,894	1,158,284	200,198	200,198	38,901	449,840	1,133,922
San Diego & Arizona	156	673,498	14,634	90,475	22,559	16,161	3,701	24,502	8,736
Seaboard Air Line	156	5,161,222	4,040,666	7,671,436	1,641,663	135,608	32,289	5,071,162	110,4
Seaboard Air Line	156	4,153,973	4,62,709	4,153,973	564,549	69,999	1,596,887	170,821	1,133,922
Seaboard Air Line	156	4,499	29,219,486	5,595,462	38,370,605	4,319,281	1,609,188	14,433,403	1,474,366

Revenues and Expenses of Railways

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues—			Operating expenses—			Net from railway operation	Operating income (or loss)	Net operating income, income, 1927.
		Freight, Passenger, (inc. misc.)	Total	Maintenance of Way and Equipment structures.	Traffic, portation.	General, Total.	Operating ratio.			
Southern Ry.	Aug. 8 mos.	\$9,447,124 \$2,190,291 \$2,40,721 \$16,154,397 \$14,219,306 \$174,456 \$89,125	\$2,190,291 \$12,607,305 \$2,40,721 \$16,154,397 \$14,219,306 \$174,456 \$89,125	\$2,047,632 \$2,040,722 \$17,066,609 \$16,725 \$16,725 \$16,725 \$16,725	\$2,040,722 \$2,040,721 \$17,066,609 \$16,725 \$16,725 \$16,725 \$16,725	\$4,040,722 \$4,040,721 \$17,066,609 \$16,725 \$16,725 \$16,725 \$16,725	\$8,820,633 \$8,820,633 \$19,925,533 \$19,925,533 \$19,925,533 \$19,925,533 \$19,925,533	70.0 72.4 72.4 72.4 72.4 72.4 72.4	\$3,786,672 \$3,786,672 \$26,065,533 \$26,065,533 \$26,065,533 \$26,065,533 \$26,065,533	\$2,925,279 \$2,925,279 \$19,925,533 \$19,925,533 \$19,925,533 \$19,925,533 \$19,925,533
Alabama Great Southern	Aug. 8 mos.	314 657,279	314 657,279	167,265	167,265	167,265	100.0	66.6	270,451 270,451	211,215 211,215
Cinn., New Orleans & Tex. Pacific & Tex.	Aug. 8 mos.	338 1,144,904	338 1,144,904	2,336,355	2,336,355	2,336,355	100.0	66.6	1,660,067 1,660,067	1,174,438 1,174,438
Georgia Southern & Florida	Aug. 8 mos.	397 1,242,335	397 1,242,335	2,242,856	2,242,856	2,242,856	100.0	66.6	4,328,531 4,328,531	3,452,920 3,452,920
New Orleans & Northeastern	Aug. 8 mos.	204 8,908	204 8,908	10,188,467	10,188,467	10,188,467	100.0	66.6	6,684,939 6,684,939	5,082,511 5,082,511
Northern Alabama	Aug. 8 mos.	110 88,554	110 88,554	52,330	52,330	52,330	100.0	66.6	1,112,970 1,112,970	762,262 762,262
Southern Pacific	Aug. 8 mos.	314 8,908	314 8,908	10,188,467	10,188,467	10,188,467	100.0	66.6	5,20,875 5,20,875	588,257 588,257
So. Pacific Steamship Lines	Aug. 8 mos.	554 5,973,731	554 5,973,731	454,665	454,665	454,665	100.0	66.6	1,975,4 1,975,4	1,346 1,346
Texas & New Orleans	Aug. 8 mos.	4,228 4,728	4,228 4,728	4,522,359	4,522,359	4,522,359	100.0	66.6	1,255,003 1,255,003	953,152 953,152
Spokane, Portland & Seattle	Aug. 8 mos.	554 5,973,731	554 5,973,731	7,249,545	7,249,545	7,249,545	100.0	66.6	7,694,240 7,694,240	5,962,404 5,962,404
Tennessee Central	Aug. 8 mos.	296 1,869,298	296 1,869,298	2,440,729	2,440,729	2,440,729	100.0	66.6	3,436,350 3,436,350	2,54,913 2,54,913
Terminal Railroad Assn. of St. L.	Aug. 8 mos.	55 1,311,067	55 1,311,067	8,783,879	8,783,879	8,783,879	100.0	66.6	503,996 503,996	477,618 477,618
Texas Mexican	Aug. 8 mos.	162 89,366	162 89,366	4,542	4,542	4,542	100.0	66.6	2,115,646 2,115,646	1,383,165 1,383,165
Toledo, Peoria & Western	Aug. 8 mos.	162 766,941	162 766,941	2,133,530	2,133,530	2,133,530	100.0	66.6	1,431,426 1,431,426	1,156,280 1,156,280
Toledo Terminal	Aug. 8 mos.	367 1,400,317	367 1,400,317	8,258	8,258	8,258	100.0	66.6	2,718,000 2,718,000	1,928,644 1,928,644
Trinity & Brazos Valley	Aug. 8 mos.	128 309,541	128 309,541	93,635	93,635	93,635	100.0	66.6	1,360,770 1,360,770	897 897
Ulster & Delaware	Aug. 8 mos.	45 2,339	45 2,339	2,341,118	2,341,118	2,341,118	100.0	66.6	1,360,770 1,360,770	897 897
Union Railroad of Penna.	Aug. 8 mos.	128 18,972,624	128 18,972,624	2,25,624	2,25,624	2,25,624	100.0	66.6	1,360,770 1,360,770	897 897
Union Pacific	Aug. 8 mos.	3,747 3,717	3,747 3,717	57,050,984	57,050,984	57,050,984	100.0	66.6	1,360,770 1,360,770	897 897
Oregon Short Line	Aug. 8 mos.	545 2,339	545 2,339	10,134,984	10,134,984	10,134,984	100.0	66.6	1,360,770 1,360,770	897 897
St. Joseph & Grand Island	Aug. 8 mos.	258 13,505	258 13,505	4,06,409	4,06,409	4,06,409	100.0	66.6	1,360,770 1,360,770	897 897
Utah	Aug. 8 mos.	111 116,953	111 116,953	2,31,017	2,31,017	2,31,017	100.0	66.6	1,360,770 1,360,770	897 897
Virginia	Aug. 8 mos.	545 2,339	545 2,339	2,413,222	2,413,222	2,413,222	100.0	66.6	1,360,770 1,360,770	897 897
Los Angeles & Salt Lake	Aug. 8 mos.	1,209 10,871,395	1,209 10,871,395	5,264,279	5,264,279	5,264,279	100.0	66.6	1,360,770 1,360,770	897 897
Western Maryland	Aug. 8 mos.	855 1,408,403	855 1,408,403	3,575,983	3,575,983	3,575,983	100.0	66.6	1,360,770 1,360,770	897 897
Wabash	Aug. 8 mos.	2,524 2,524	2,524 2,524	5,39,072	5,39,072	5,39,072	100.0	66.6	1,360,770 1,360,770	897 897
Ann Arbor	Aug. 8 mos.	293 37,982,587	293 37,982,587	4,873,657	4,873,657	4,873,657	100.0	66.6	1,360,770 1,360,770	897 897
Western Maryland	Aug. 8 mos.	878 1,508,176	878 1,508,176	3,579,817	3,579,817	3,579,817	100.0	66.6	1,360,770 1,360,770	897 897
Western Pacific	Aug. 8 mos.	1,050 1,050	1,050 1,050	2,296,617	2,296,617	2,296,617	100.0	66.6	1,360,770 1,360,770	897 897
Wheeling & Lake Erie	Aug. 8 mos.	511 1,890,145	511 1,890,145	3,043,271	3,043,271	3,043,271	100.0	66.6	1,360,770 1,360,770	897 897
Wichita Falls & Southern	Aug. 8 mos.	168 626,360	168 626,360	98,937	98,937	98,937	100.0	66.6	2,04,025 2,04,025	143,479 143,479

News of the Week

(Continued from page 731)

Rate of return on property investment	5.04%	4.77%
Eight months ended August 31st		
Total operating revenues	\$3,977,963,495	\$4,092,436,524
Total operating expenses	2,965,275,064	3,088,037,553
Taxes	249,710,048	252,103,678
Net railway operating income	685,588,012	676,826,176
Operating ratio—per cent	74.54	75.46
Rate of return on property investment	4.47%	4.52%

Assign Space for Railway Supply Exhibit in March

The National Railway Appliances Association, at a meeting of its board of directors on September 25, assigned space for the annual exhibition at the Coliseum at Chicago, March 4-7, 1929, to 162 railway supply companies that are members. This year's list includes four companies that were not exhibitors in 1928.

The member companies who had arranged for space on September 25 were:

A. C. Spark Plug Company, Flint, Mich.
Adams Motor & Manufacturing Co., Chicago.
Adams & Westlake Co., Elkhart, Ind.
Air Reduction Sales Company, New York.
American Brass Company, Waterbury, Conn.
American Cable Company, Inc., New York.
American Car & Foundry Co., New York.
American Chain Company, Bridgeport, Conn.
American Fork & Hoe Co., Cleveland, Ohio.
American Hoist & Derrick Co., St. Paul, Minn.
American Railway Hydrant & Valve Co., St. Paul, S. I., N. Y.
American Steel & Wire Co., Chicago.
American Valve & Meter Co., Cincinnati, Ohio.
Ames Shovel & Tool Co., North Easton, Mass.
Anchor Co., Milwaukee, Wis.
Armco Culver Manufacturers Association, Mid-dleton, Ohio.
Barber Asphalt Company, Philadelphia, Pa.
Barrett Company, New York.
Bethlehem Steel Company, Bethlehem, Pa.
Binks Spray Equipment Company, Chicago.
Brach Manufacturing Corporation, L. S., New-ark, N. J.
Buda Company, Harvey, Ill.
Carey Company, Philip, Cincinnati, Ohio.
Carnegie Steel Company, Pittsburgh, Pa.
Carter Bloxond Flooring Company, Kansas City, Mo.
Chicago Bridge & Iron Works, Chicago.
Chicago Pneumatic Tool Company, New York.
Chicago Railway Signal & Supply Co., Chicago.
Chipman Chemical Engineering Company, Inc., Bound Brook, N. J.
Cleveland Frog & Crossing Co., Cleveland, Ohio.
Cleveland Pneumatic Tool Co., Cleveland, Ohio.
Copperweld Steel Company, Glassport, Pa.
Creepcheck Company, Inc., Hoboken, N. J.
Crerar, Adams & Co., Chicago.
Cullen-Friestd Company, Chicago.
Curtin-Howe Corporation, New York.
Cyclone Fence Company, Waukegan, Ill.
Dearborn Chemical Company, Chicago.
Detroit Graphite Company, Detroit, Mich.
DeVilbiss Company, Toledo, Ohio.
Dickinson, Paul, Inc., Chicago.
Dilworth, Porter & Co., Inc., Pittsburgh, Pa.
Duff Manufacturing Company, Pittsburgh, Pa.
Edison Storage Battery Company, Orange, N. J.
Edison, Inc., Thos. A., Bloomfield, N. J.
Electric Railweld Service Corporation, Chicago.
Electric Storage Battery Company, Philadelphia, Pa.
Electric Tamper & Equipment Co., Chicago.
Elwell-Parker Electric Company, New York.
Engineering News-Record, New York.
Fairbanks, Morse & Co., Chicago.
Fairmont Railway Motors, Inc., Fairmont, Minn.
Frog, Switch & Manufacturing Co., Carlisle, Pa.
General Electric Company, Schenectady, N. Y.
General Railway Signal Company, Rochester, N. Y.
Giant Manufacturing Company, Council Bluffs, Iowa.
Griswold Safety Signal Company, Minneapolis, Minn.
Hayes Track Appliance Company, Richmond, Ind.
Headley Good Roads Company, Philadelphia, Pa.
Howlett Construction Company, Moline, Ill.
Hubbard & Co., Pittsburgh, Pa.
Illinois Steel Company, Chicago.
Ingersoll-Rand Company, New York.
Jeandrin, W. J., Hoboken, N. J.
Jewell Electrical Instrument Company, Chicago.
Johns-Manville Corporation, New York.
Jordan Company, O. F., East Chicago, Ind.
Kalamazoo Railway Supply Company, Kalamazoo, Mich.

Kentucky Rock Asphalt Company, Inc., Louisville, Ky.
Kerite Insulated Wire & Cable Co., Inc., New York.
Keystone Grinder & Manufacturing Co., Pittsburgh, Pa.
Koppel Industrial Car & Equipment Co., Pittsburgh, Pa.
Layne & Bowler, Inc., Memphis, Tenn.
Lebon Company, Chicago.
Locomotive Finished Material Company, Atchison, Kan.
Lorain Steel Company, Johnstown, Pa.
Louisville Frog & Switch Co., Louisville, Ky.
Long, Jr., Company, Chas. R., Louisville, Ky.
Lufkin Rule Company, Saginaw, Mich.
Lundie Engineering Corporation, New York.
Lundy Company, E. A., Pittsburgh, Pa.
MacLean-Fogg Lock Nut Company, Inc., Chicago.
MacRae's Blue Book Company, Chicago.
Magnetic Signal Company, Los Angeles, Cal.
Maintenance Equipment Company, Chicago.
Massey Concrete Products Corporation, Chicago.
Mechanical Manufacturing Company, Chicago.
Metal & Thermit Corporation, New York.
Metalweld, Inc., Philadelphia, Pa.
Morden Frog & Crossing Works, Chicago.
Murdock Manufacturing & Supply Co., Cincinnati, Ohio.
National Boiler Washing Company of Illinois, Chicago.
National Carbon Company, Inc., New York.
National Lead Company, New York.
National Lock Washer Company, Newark, N. J.
National Safety Appliance Company, San Francisco, Cal.
National Vulcanized Fibre Company, Wilmington, Del.
Nelson Manufacturing Company, B. F., Minneapolis, Minn.
Nichols & Bro., Geo. P., Chicago.
Nordberg Manufacturing Company, Milwaukee, Wis.
Northwest Engineering Company, Chicago.
Northwestern Motor Company, Eau Claire, Wis.
Ohio Brass Company, Mansfield, Ohio.
Ohio Valley Rock Asphalt Company, Inc., Louisville, Ky.
Okonite Company, Passaic, N. J.
Olkite Collender Cable Company, Inc., Passaic, N. J.
Oxweld Railroad Service Company, Chicago.
P. & M. Company, Chicago.
Paasche Airbrush Company, Chicago.
Page Steel & Wire Co., Bridgeport, Conn.
Pettibone Mulliken Company, Chicago.
Pocket List of Railroad Officials, New York.
Positive Rail Anchor Company, Chicago.
Prendergast Company, Marion, Ohio.
Pyle-National Company, Chicago.
O. & C. Co., The, 90 West St., New York.
Rail Joint Company, New York.
Railroad Accessories Corporation, New York.
Railroad Supply Company, Chicago.
Railway Maintenance Corporation, Pittsburgh, Pa.
Railway Purchases & Stores, Chicago.
Rampow Ajax Corporation, Hillburn, N. Y.
Rawls Machine & Manufacturing Co., Chicago.
Reade Manufacturing Company, Jersey City, N. J.
Reed-Prentice Corporation, Worcester, Mass.
Reliance Manufacturing Company, Massillon, Ohio.
Richards-Wilcox Manufacturing Company, Aurora, Ill.
Roberts Company, Geo. J., Dayton, Ohio.
Roberts & Schaefer Co., Chicago.
Robertson Company, H. H., Pittsburgh, Pa.
Robertson & Co., Wm., Chicago.
Roller-Smith Company, New York.
Sears, Roebuck & Co., Chicago.
Sellers Manufacturing Company, Chicago.
Signal Accessories Corporation, Utica, N. Y.
Simmons-Boardman Publishing Company, New York.
Sinning Track Liner Company, Ramsey, Ill.
Sivyer Steel Casting Company, Milwaukee, Wis.
Skelton Shovel Company, Inc., St. Louis, Mo.
Snap-on Wrench Company, Chicago.
Snow Construction Company, T. W., Chicago.
Southern Signal Corporation, Louisville, Ky.
Standard Automatic Signal Corporation, Chicago.
Standard Oil Company of Indiana, Chicago.
Syntron Company, Pittsburgh, Pa.
Templeton, Ken'y & Co., Ltd., Chicago.
Torchweld Equipment Company, Chicago.
Transportation Publishing Company, Los Angeles, Cal.
Union Switch & Signal Co., Swissvale, Pa.
U. S. Wind Engine & Pump Co., Batavia, Ill.
Verona Tool Works, Pittsburgh, Pa.
Warren Tool & Forge Co., Warren, Ohio.
Waterbury Battery Company, Waterbury, Conn.
Weir, Kilby Corporation, Aurora, Ill.
Western Wheeled Scraper Company, Aurora, Ill.
Westinghouse Electric & Manufacturing Co., E. Pittsburgh, Pa.
Wetton Electrical Instrument Company, Newark, N. J.
Wharton, Jr., & Co., Wm., Easton, Pa.
Wood Conversion Company, Chicago.
Woodin's Forge & Tool Co., Verona, Pa.
Woolery Machine Company, Minneapolis, Minn.
Wyoming Shovel Works, Wyoming, Pa.

Foreign

Railways of Holland in 1927

Gross revenues equivalent to \$65,211,000 and operating expenses of \$48,000,000 were reported by Dutch railways for the year 1927. These figures compare with revenues of 65,682,000 and expenses of \$47,959,500 in 1926. The lessened profits are attributed to reduced passenger rates, since returns from freight revenue were higher, despite certain lower tariff schedules which became effective in 1927.

Central American Line Near Completion

Junction of the Salvadoran and Guatemalan branches of the International Railways of Central America is expected to be completed early in the coming year, according to a recent report made public by the U. S. Department of Commerce. This will greatly shorten the time to Europe and Atlantic coast points of the United States for both freight and passengers, as compared with the time required over the present route via the Panama Canal.

Four-Class Passenger Service Abolished by German Roads

German railroads, on October 7, abandoned the four-class passenger service and inaugurated operations on a two-class plan. The first and fourth classes were discontinued. The plan was adopted as a move for increased revenues which are expected from the augmented fares of those who formerly traveled fourth class and now must use the third class service. While the regular first class service is abolished a number of express and several international trains will have a coach where fares will be approximately the same as the former first class rate.

Special Rail Rates for Tourists' Autos in England

The London & North Eastern recently inaugurated a special rate for the transportation of automobiles to accommodate tourists who may wish to be relieved of the long drive from one scenic center to another. The rate is approximately six cents per mile and the automobiles are moved on the same train on which their owners make the journey, thus eliminating any confusion or waiting at the destination.

A special covered truck has been designed for this automobile movement. These trucks are fitted with special wheel bars to which the vehicle is strapped and have a door at either end, the lower half of the door dropping to form a bridge between the floor of the truck and the station platform.

The special rate of six cents a mile which is but a fraction of regular automobile rates on the L. & N. E. is available only for journeys of more than 50 miles and then only when two or more passenger tickets are purchased along with the purchase of the automobile's transportation.

Traffic

The L. C. L. Corporation announces that a contract has been closed for the use of its freight containers on the Baltimore & Ohio; and that negotiations are under way with the Missouri Pacific.

The Northwest Shippers Advisory Board will hold its twenty-fifth formal meeting at Duluth, Minn., on October 16. W. H. Bremner will be the principal speaker.

The Chicago & Eastern Illinois, in conjunction with the St. Louis-San Francisco, has established second morning freight delivery from Chicago to Springfield, Mo., Joplin and Tulsa, Okla. Consignments to Dallas, Texas, and Ft. Worth now arrive on the third morning instead of on the fourth morning as previously.

The Atlantic States Shippers Advisory Board met in Wilmington, Del., on October 4, with an attendance of about 500. The commodity committees reporting expect, in the aggregate, a small increase of freight traffic during the coming three months as compared with the last quarter of 1927.

The expected increase in automobiles and trucks, as reported by the committees, is 30 per cent; in confectionery, 30 per cent and in fertilizer 46 per cent.

The Department of Commerce, Washington, estimates that Americans traveling in foreign countries this year will spend 900 million dollars, or about 100 millions more than in the year preceding. The number of passports issued by the Department of State in the first nine months of 1928, was 163,319 which is 21.4 per cent greater than the number issued in the corresponding period of 1927.

The maintenance, by order of the Railroad Commission of South Carolina, of a carload minimum weight of 30,000 pounds on intrastate shipments of fertilizers and fertilizer materials was found by the Interstate Commerce Commission to unduly prejudice interstate shippers, unduly prefer shippers located in South Carolina and result in unjust discrimination against interstate commerce, in a decision made public on October 8. The South Carolina Commission put into effect the rates prescribed by the federal commission for interstate traffic, as a result of a general investigation of fertilizer rates, but adopted the lower carload minimum whereas the interstate minimum was 40,000 pounds. At the request of railroads and interstate shippers the Interstate Commerce Commission re-opened the case and issued an order requiring the removal of the discrimination found.

Midwest Shippers' Board

The volume of business in Midwest territory in remaining three months of this year will be approximately seven

per cent greater than in the same months a year ago, according to forecasts at the seventeenth regular meeting of the Midwest Shippers' Advisory Board at Springfield, Ill., on October 10. The largest increase, amounting to over 100 per cent, is expected in the movement of fresh fruits. In potato shipments, the anticipated is 80 per cent in excess of that of last year. An increase of about 11 per cent is predicted for agricultural implements.

Increases of 10 per cent are forecast for shipments of cement, clay, gravel, sand and stone, iron and steel, and petroleum and petroleum products; and grain 9½ per cent.

Decreases in activity are anticipated in six lines. Hay, straw and alfalfa, 20 per cent; fresh vegetables, 15 per cent; for live stock and poultry and dairy products, 8 per cent. The movement of ores and concentrates will be about 5 per cent off.

Railroads' Ability to Meet Transportation Demands

The Central of Georgia, in an advertisement published in the newspapers in its territory, discusses the ability of the railroads to meet future transportation demands and explains the relationship between the railroads and waterways, bus and truck lines and air lines. Advocates of other forms of transportation frequently base their arguments for the support and development of bus and truck lines and boats upon the plea that the railroads may prove unable to meet the increasing transportation demands. There is no ground for such a belief, says the advertisement. Despite their tremendous traffic, the railroads are operated more efficiently than ever before. Traffic of 1927 was considerably less than in 1926, and traffic for 1928 shows still further declines. If the traffic were offered, the railroads could exceed the efficiency they displayed in handling the record breaking traffic of 1926. So far as efficiency goes, the railroads are now making even better records than in 1926. The public should not be misled into thinking that there is any vital necessity for artificial development of any of these other forms of transportation because of imminent danger that the railroads may prove unable to meet the country's transportation demands.

The allowing of a fair rate of return, rather than the artificial development of competing forms of transportation, is the best insurance that can be taken out against a failure or breakdown of our railroad system.

Peach Distribution Widespread

The average annual production of peaches in this country during the five-year period from 1923 to 1927, inclusive, was 52,500,000 bushels, or 51 per cent greater than that for the five-year period

from 1903 to 1907, inclusive, according to a study of production, prices and distribution of peaches just completed by the Bureau of Railway Economics. This compares with an increase of about 37 per cent in the population of the United States in that time.

"California ranks as the most important peach-growing state," according to the bulletin. "The average annual production of that state for the five year period from 1923 to 1927 amounted to 17,808,000 bushels or 34.1 per cent of the average annual production of the entire United States. Georgia ranks second with 7,247,000 bushels or 13.9 per cent; New Jersey, third, with 2,437,000 bushels or 4.7 per cent, and Arkansas, fourth, with 2,008,000 bushels or 3.8 per cent. Thus 56.5 per cent of the commercial crop during the five years 1923 to 1927 was produced in 4 states while the remaining 43.5 per cent was produced in 36 states. Forty out of the 48 states produce peaches commercially.

"The trends of peach prices not only in the retail stores but also those paid to the grower and in the wholesale market were similar, prices being highest early in the season, then dropping rapidly to a low point in the third quarter of the season and rising gradually to the close of the season.

"The margin between the wholesale price and retail price of peaches exceeded the margin between grower's price and wholesale price, the latter margin including all transportation costs in getting the peaches to market.

"The spreads in prices paid to growers for peaches regardless of variety or grade during the 1927 season at individual points were frequently many times the freight rates to distant markets.

"The seasonal spread was usually many times the freight rate from origin point to market. The spread of \$15.03 per hundred pounds in prices of Georgia peaches at New York was about 12 times the freight rate from points in Georgia while the seasonal spread of \$13.83 at Chicago was about 14 times the freight rate. The seasonal spread at Baltimore was about 7 times the freight rate and that at St. Louis over 10 times the freight rate from points in Georgia.

"New York is by far the largest market for fresh peaches. The rail unloads in that market alone in 1927 amounted to nearly 4,800 carloads, which was more than double the number of cars unloaded at Chicago, the next largest market. Peaches from Georgia reached 58 of the 66 markets included in the study, or all of the markets east of Salt Lake City, Utah, with the exception of Shreveport, Louisiana, and El Paso, Texas. Peaches from California reached 56 of the markets from coast to coast and from the Great Lakes to the Gulf. Those from Illinois reached 38 markets; Arkansas, 36; North Carolina and New York, 35 each; New Jersey, 32; Pennsylvania, 31; and Delaware and Maryland, 30 each. Even those states which made small shipments sometimes sent them long distances. Two of the four cars shipped from Oregon, for example, went to New York."

Equipment and Supplies

Locomotives

THE CANADIAN NATIONAL has ordered 5 Mountain type locomotives from the Canadian Locomotive Company, Ltd. These locomotives are a modified 6100 type for passenger service. Inquiry for this equipment was reported in the *Railway Age* of September 29.

Passenger Cars

THE CANADIAN NATIONAL contemplates coming in the market soon for 5 buffet parlor cars, 5 mail and express cars, and 10 sleeping cars, for service in the United States. This is in addition to its inquiry for 25 coaches, 15 sleeping cars, and 2 combination baggage and smoking cars, reported in the *Railway Age* of September 29.

Freight Cars

THE MAINE CENTRAL has ordered 4 all steel box cars of 50 tons' capacity, from the Standard Steel Car Company.

THE NORTHERN REFRIGERATOR CAR COMPANY is inquiring for 300 refrigerator cars.

THE AMERICAN REFRIGERATOR TRANSIT COMPANY is inquiring for 1000 refrigerator cars of 40 tons capacity and 40 ft. long.

THE CANADIAN NATIONAL is inquiring for 300 flat cars. This is in addition to its inquiry for 1500 box and 30 tank cars, reported in the *Railway Age* of September 29.

THE GREAT NORTHERN has ordered 500 steel underframes from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of September 29.

Machinery and Tools

THE CHESAPEAKE & OHIO is inquiring for a number of machine tools.

THE NILES-BEMENT-POND COMPANY has received orders for railroad equipment machine tools, including a Ramsom No. 131 grinder, a No. 24 Aurora drill and a Niles h.b.4 floor borer.

THE NEW YORK CENTRAL has ordered two 18 in. lathes and a 90 in. driving wheel lathe, from Manning, Maxwell & Moore, Inc. This road is also inquiring for some additional machine tools.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for one rod grinder, two emery grinders, one gate shear, one bench punch, one bevel rotary shear, one 36-in. drill press, one horizontal punch and one 18-in. lathe.

Signaling

THE BALTIMORE & OHIO has ordered from the Union Switch & Signal Company, 127 position-light signals, ground and dwarf, to be installed on the line between Newark, Ohio, and Columbus, 33 miles, double track. This line is used jointly by the Baltimore & Ohio and the Pennsylvania.

Southern Pacific to Spend 2½ Millions

The Southern Pacific has authorized the expenditure of \$2,500,000 for the installation of automatic block signals on 800 miles of the lines of the Pacific System. With the completion of these proposed installations the main lines and the principal branch lines of the Pacific System will be completely equipped with automatic block signals.

Pennsylvania Proceeds to Install Cab Signals

The Pennsylvania has ordered from the Union Switch & Signal Company, 225 locomotive equipments for the installation, on the New York division, of cab signaling, carrying out the project which was announced at Washington last April. The wayside apparatus will be fixed on 327 miles of track; that is to say, the whole of the line, mostly four-track but some six-track, from Manhattan Transfer, N. J. (Newark) to North Philadelphia, Pa., 79 miles. The apparatus on the locomotive, which gives both visual and audible indications and provides for acknowledgement by the engineman, is of the continuous code type, with four indications, similar to that which is already in use on those lines of the Pennsylvania which are equipped with automatic train stops, and have in use over 1100 locomotives. All locomotives whether having the automatic stop or not, can be interchangeably used over any of the equipped tracks on the Pennsylvania System. The audible cab signal is a whistle, operated from the constant source of air pressure. It will sound on each less favorable change of indication and will continue to sound until acknowledged by the engineman. There will be cab signals—four-indication—on both sides of the cab, but an acknowledgement only on the engineman's side.

Iron and Steel

THE SOUTHERN is inquiring for 1000 tons of steel for bridges in Kentucky.

THE CHICAGO, BURLINGTON & QUINCY is inquiring for 1,500 tons of structural steel for miscellaneous bridge work.

THE ERIE has ordered 250 tons of steel from the American Bridge Company, for a bridge at Youngstown, Ohio.

THE LONG ISLAND is inquiring for 200 tons of steel for a bridge in Brooklyn, N. Y.

THE PENNSYLVANIA has ordered 500 tons of steel from the McClintic-Marshall Company, for a bridge at South Philadelphia.

THE READING COMPANY is arranging to purchase 30,000 tons of rail, together with the angle plates, bolts and tie plates required in connection with the use of this rail.

THE GREAT NORTHERN has ordered 1,900 tons of structural steel for miscellaneous bridge work from the American Bridge Company.

THE ERIE has ordered 46,622 tons of rail for its 1929 requirements, divided as follows: Carnegie Steel Company, 24,471 tons, Illinois Steel Company, 11,151 tons, Bethlehem Steel Company, 7,500 tons and Inland Steel Company, 3,500 tons.

THE NEW YORK CENTRAL is now inquiring, until 12 o'clock noon, October 25, for its requirements for 1929, of open hearth steel rail and splice bars for the New York Central and the Cleveland Union Terminals. This calls for approximately 190,000 tons. Bids will be received by W. C. Bower, manager of purchases and stores, 466 Lexington avenue, New York.

Pennsylvania to Spend \$17,600,000 For Rail and Accessories

The Pennsylvania, in addition to its inquiry for 260,000 tons of rail to cost about \$11,100,000, reported in the *Railway Age* of October 6, will buy accessories including fastenings, tie plates, bolts and spikes to cost more than \$6,500,000. With the exception of the purchase of rail for the year 1928 which amounted to 300,000 tons, the 1929 figures are the largest in the Pennsylvania's history. The new rail for 1929 delivery will be used for carrying on its program of renewals and track betterments, particularly the substitution of heavier rail, weighing 130 lbs. to the yard, in main running tracks. The company will also continue its additional double-tracking work, and new track construction at various points. The annual requirements of steel rail by the Pennsylvania System during the last eleven years are shown in the following table:

Year	Tons Authorized	Year	Tons Authorized
1919	38,000	1925	120,000
1920	119,500	1926	200,000
1921	200,000	1927	250,000
1922	86,000	1928	300,000
1923	138,000	1929	260,000
1924	194,000		

THE NEW ZEALAND GOVERNMENT RAILWAYS have adopted the policy of absorbing motor coach concerns whose routes parallel the rail lines and compete for passenger traffic. The railways already have purchased some 60 highway vehicles which had been cutting materially into passenger revenues of the lines which they paralleled. The greater part of the coach lines which have been absorbed were on 10 mile suburban runs out of Wellington and Napier. In each case coach schedules now supplement train schedules and also cover routes which are not served by rail.

Supply Trade

The Union Chain & Manufacturing Company, Sandusky, Ohio, is asking approval of its stockholders, to take over the control of the American High Speed Chain Company, Indianapolis, Ind. and to combine the two companies.

The American Car & Foundry Company has organized a research department, of which William H. Woodin, Jr., the son of the head of the American Car & Foundry Company and the American Locomotive Company, has been placed in charge, with the title of director of research. Mr. Woodin has appointed as his assistants, A. H. Wobbe, assistant director of research; J. W. Steinmeyer, research engineer, and R. M. Allen, research metallurgist. It is the improvements which have already been made in several of the company's products as a result of Mr.



William H. Woodin, Jr.

Woodin's research and experiments in metallurgy, that have led to the establishment of a complete organization for the future handling of research problems. Mr. Woodin acquired his practical experience at the Berwick, Pa., plant of the American Car & Foundry

Company where he has served as an iron worker and a molder. Aside from his work in metallurgy, his activities as a microscopist and electrical engineer have already attracted attention. His headquarters will be at the executive offices of the company, 30 Church street, New York.

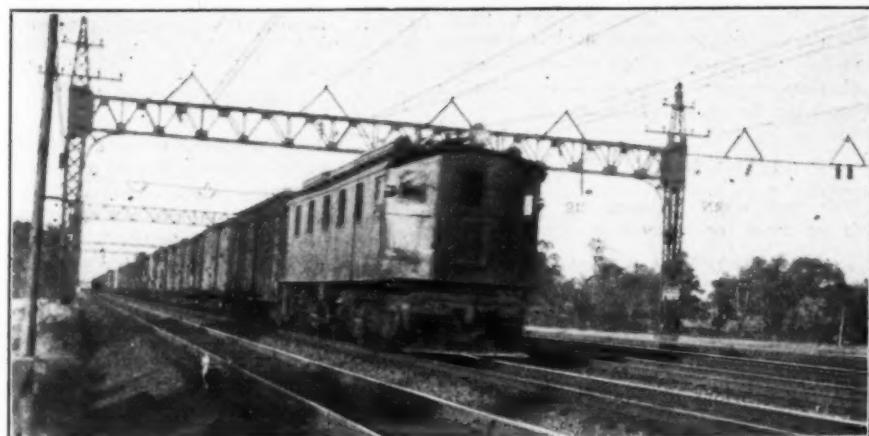
George W. Denyven, who has been associated with the E. P. Sanderson Company for the past 11 years, is now associated with the Arthur C. Harvey Company, iron and steel jobbers, of Boston, the E. P. Sanderson Company having been taken over by Joseph T. Ryerson & Son, Inc. Mr. Denyven was with the Arthur C. Harvey Company for 12 years prior to his association with the E. P. Sanderson Company. He still retains New England representation for the Rome Iron Mills, Inc., the Champion Rivet Company, the Buffalo Steel Company, and the Railway Devices Company, with offices located at 250 Stuart street, Boston, Mass.

Trade Publications

BUILDING VALUE, THE OFFICE BUILDING, THE HOTEL BUILDING, THE INDUSTRIAL BUILDING—These are the titles of four papers by Arthur Tappan North, architect, published in booklet form by the American Institute of Steel Construction, 285 Madison avenue, New York. They deal with the economics of building construction and use, and point out the superiority of steel frame buildings, from the standpoint of such considerations as salvage value, ease of alteration and reconstruction, etc.

ENDURANCE AND BEAUTY IN STEEL BRIDGES—The American Institute of Steel Construction, 285 Madison avenue, New York, has published a 20-page pamphlet containing a paper by Charles Evan Fowler, consulting engineer, comprising a brief history of metal bridge building, with particular emphasis on examples of bridges in which a high degree of success was attained in obtaining truly attractive outlines. It also stresses the long life attained by many iron and steel bridges.

* * *



On the N. Y., N. H., & H. near Pelham Bay Park, N. Y.

Construction

ATLANTIC & NORTHWESTERN.—The Interstate Commerce Commission has authorized this company to construct a line from Mount Pleasant to McClellanville, S. C., about 32 miles, and also from McClellanville to Jamestown, 18 miles.

ATCHISON, TOPEKA & SANTA FE.—A contract for the construction of a viaduct over the tracks of this company and of the Missouri Pacific at East Sixth avenue, Topeka, Kan., has been let to the Kansas City Bridge Company, Kansas City Mo. The structural steel for the viaduct will be furnished by the American Bridge Company, Chicago. The city of Topeka will pay about \$162,000 of the cost of the structure, the remainder of the expenditure to be borne by the two railroads.

BIG SANDY & CUMBERLAND.—Bids will be closed on October 16 for the construction of a line from a point one mile east of Devon, W. Va., through Hurley, Va., and Grundy to the Kentucky-Virginia state line along the Levisa river, 39 miles. This project will involve the excavation of 2,655,000 cu. yd. of material for roadway construction and the driving of two tunnels, 4,000 ft. and 1,600 ft. long respectively, with the excavation of 135,000 cu. yd. of material. Structures on the new line will include a bridge over the Tug river at Lower Elk, Ky.

CALHOUN BRIDGE COMPANY.—This company, which is controlled by those interested in the proposed Alton, Quincy & Northern, has awarded a contract to the Owens Construction Company, New York, for the construction of a combined railroad and vehicular bridge over the Illinois river near Grafton, Ill., at a cost of \$700,000.

LOUISVILLE & NASHVILLE.—This company is receiving bids for the construction of a passenger station at Bay St. Louis, Miss., which it is estimated will cost about \$50,000. The two-story structure will be constructed of stucco over tile or brick and will have outside dimensions of 30 ft. by 125 ft.

LOUISVILLE & NASHVILLE.—A contract for the construction of buildings and other structures in connection with the new yard and terminal at Mobile, Ala., has been let to the W. Horace Williams Company, New Orleans, La. Work to be done under this contract includes the construction of a 17-stall brick roundhouse, a machine shop, a boiler and blacksmith shop, a power house, an office building, a store house, a yard office, a trainmen's building, stock pens, a car shop, a 500-ton coaling station, cinder pits, and water supply system. Track laying in the yards will be undertaken by company forces.

NORFOLK & WESTERN.—This road has awarded a contract to H. M. Waugh, Williamson, W. Va., for work in connec-

tion with a grade crossing elimination and yard extensions at Columbus, Ohio. The project is expected to involve an expenditure of approximately \$500,000.

PITTSBURGH & WEST VIRGINIA.—The Interstate Commerce Commission has denied petitions filed by the Baltimore & Ohio and New York, Chicago & St. Louis asking it to reconsider the decision by which it authorized this company to build

an extension from Cochran's Mill to Connellsville, Pa.

UNION PACIFIC.—Contracts for the construction of a freight and a passenger station at Abilene, Kan., have been let to George A. Johnson & Sons, Chicago. The passenger station will be constructed of brick and hollow tile and will have outside dimensions of 32 ft. by 185 ft. while the freight station will have dimensions of 30 ft. by 164 ft.

Railway Finance

ATCHISON, TOPEKA & SANTA FE.—*Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue \$14,691,000 of California-Arizona Lines first and refunding mortgage bonds, series A, to be sold at not less than 98½ and interest, and the proceeds used to reimburse the treasury for advances to the California, Arizona & Santa Fe for capital expenditures.

CHESAPEAKE & OHIO.—*Hearing on Application for Modification of Merger Order.*—The Interstate Commerce Commission has assigned for further hearing, date and place to be announced later, this company's petitions for modification of the commission's order by which it authorized conditionally the acquisition of control of the Pere Marquette and the issuance of C. & O. common stock. The company desires authority to purchase Pere Marquette common stock held by the Nickel Plate at \$133.33 a share, instead of the price of \$110 approved by the order, and also to issue its own stock at par instead of at \$150 a share.

ERIE.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority to assume obligation and liability in respect of \$5,340,000 of 4½ per cent equipment trust certificates. The application said the company is inviting bids from upwards of 12 banks or bankers.

GREAT NORTHERN.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire the property of seven subsidiaries, which it has heretofore operated and controlled through stock ownership; the Duluth Terminal, the Great Falls & Teton County, the Great Northern Terminal, the Minneapolis Belt, the Minneapolis Western, the Montana Eastern and the Watertown & Sioux Falls. The consideration is to be the value of the property as shown on the books as of December 31, 1928, and the transaction will be covered by debit and credit entries on the books, taking into account advances made by the parent company.

KANSAS CITY, MEXICO & ORIENT.—*Sale.*—Judge John C. Pollock of the United States District Court of Kansas has approved the sale of the Kansas City, Mexico & Orient to the Atchison, Topeka &

Santa Fe for \$14,500,000, with the purchaser assuming a mortgage of \$2,500,000 which is held by the government. Judge Pollock's approval, following that of the Interstate Commerce Commission several weeks ago, leaves the way clear for the transfer of the stock within 15 days, the time allowed by the court. Until the transfer is made the court retains jurisdiction over the road through William T. Kemper, receiver.

LONG ISLAND.—*Acquisition.*—The Interstate Commerce Commission has authorized the acquisition and operation of the railroad operated by the Degnon Terminal in Queens county, N. Y., 2.9 miles.

MISSOURI PACIFIC.—*Valuation.*—The Interstate Commerce Commission has assigned the argument on the tentative valuation for November 21 at Washington before Division 1.

MISSOURI-KANSAS-TEXAS.—*Merger Application Withdrawn.*—A withdrawal of this company's application to the Interstate Commerce Commission for authority to acquire control of the Kansas City Southern or the St. Louis Southwestern or both was filed with the Commission on October 5 together with a copy of resolutions adopted by the board on October 4 stating that in view of the circumstances the company's officers and counsel have advised it that, in their opinion, the approval of the application by the commission is not reasonably to be anticipated. The resolution refers to the commission's institution of anti-trust proceedings against the roads as an indication that the commission "looks with disfavor upon the consideration of plans for the unification of carriers under circumstances where corporate action by any of the carriers involved may be influenced by relationships of control or ownership possessed by another of them." Reference is also made to the recent order revoking the authority of L. F. Loree to act as a director of the M-K-T and the resolution states that "while certain of these stock ownerships and official relationships have now been terminated, nevertheless the plan set forth in said application was formulated while these relationships still existed, and it seems probable that the said plan might therefore be considered objectionable by said commission." It is also stated that by reason of changes

in market prices the proposed bases for exchange of stock are now materially out of line and that it is doubtful whether it would be possible to secure the necessary support from the stockholders of the K.G.S. and Cotton Belt to enable the plan to be consummated. "The directors of this company feel," the resolution continues, "that any plan for the unification of some or all of the three lines involved in said application must be developed in a manner fully in harmony with the indicated views of the commission, in the light of the changed conditions now or hereafter existing, and with the concurrence of all the carriers involved."

The commission has announced a cancellation of the hearing on the application set for October 22 at Dallas, Tex.

MISSOURI PACIFIC.—*Bonds.*—Kuhn, Loeb, & Co. have purchased subject to the approval of the Interstate Commerce Commission \$25,000,000 principal amount of this company's first and refunding mortgage 5 per cent bonds, Series "G", due November 1, 1978, which they are offering for subscription at 99½ and accrued interest. The purpose of this issue is to reimburse the treasury of the company for capital expenditures heretofore made, to provide in part for the company's improvement program for 1929, and for other corporate purposes.

OREGON ELECTRIC.—*Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a branch from West Woodburn to Woodburn, Ore., 2.3 miles.

SEABOARD AIR LINE.—*Bonds.*—The Interstate Commerce Commission has authorized an issue of refunding mortgage bonds in an amount which, when taken at their fair market value at the time of pledge, will not exceed \$1,096,465, to be pledged under the first and consolidated mortgage; also \$1,178,800 of first and consolidated mortgage bonds, to be pledged as collateral for short-term notes.

TOLEDO TERMINAL.—*Bonds.*—The Interstate Commerce Commission has issued a supplemental order modifying its order of August 27, which authorized this company to issue \$259,000 of first mortgage 4½ per cent bonds at public sale to the highest bidder at not less than 95 and interest, so that the bonds may be issued for sale through competitive bidding but not at public sale.

WEST JERSEY & SEASHORE.—*New Director.*—Arthur C. Dorrance, general manager of the Campbell Soup Company and president of the Franco-American Food Company was elected a director of this road at a meeting of the board, held on October 5. Mr. Dorrance will succeed his brother, Dr. John T. Dorrance, president of the Campbell Soup Company, whose resignation as a director of the road was accepted.

WHEELING & LAKE ERIE.—*Anti-Trust Proceedings.*—The Interstate Commerce Commission has assigned for argument at

Washington on December 5 the proceedings against the Baltimore & Ohio, the New York Central and the New York, Chicago & St. Louis for alleged violation of the Clayton law in the acquisition of stock of the Wheeling & Lake Erie without prior approval of the commission.

Average Price of Stocks and of Bonds

	Last	Last
	Oct. 9	week year
Average price of 20 representative railway stocks.	119.62	121.48
Average price of 20 representative railway bonds.	93.61	93.67
		96.06

Dividends Declared

Bangor & Aroostook.—Common, \$87, quarterly; preferred, \$1.75, quarterly, both payable December 31 to holders of record November 30.

Pullman.—\$1.00, quarterly, payable November 15 to holders of record October 24.

SINCE JULY 1 THE CANADIAN PACIFIC has completed the construction of and placed in operation about 164 miles of branch lines in Saskatchewan and Alberta. The branch from Asquith, Sask., to Sonningdale, 30 miles, was opened for operation on July 23; the Cassils (Alta.)—Scandia branch, 23 miles, was placed in operation on July 1; the Melfort (Sask.)—Edenbridge branch, 18 miles, was placed in operation on September 9; the Clansdon (Alta.)—Willingdon branch, 65 miles, was placed in operation in September; and the Maxstone (Sask.)—Wood Mountain branch, 28 miles, was opened for operation during the last few days of September.

leased to the Canadian Pacific) at that point. From 1883 to 1886 Mr. Wilcox was an agent and operator on the Western division of the Canadian Pacific and from the latter date until 1903 he served successively as dispatcher at Winnipeg, Moose Jaw, Sask., and Assiniboia and as chief dispatcher at Assiniboia. He was then appointed chief dispatcher on the Canadian Northern (now a part of the Canadian National) at Port Arthur, Ont., and in 1904 he was promoted to superintendent at Winnipeg. Until November, 1911, he served as superintendent on various divisions of the Canadian Northern, when he was promoted to assistant general superintendent at Winnipeg. Mr. Wilcox was further promoted to general superintendent of the Western division, with headquarters at Edmonton, Alta., in December, 1911, then being transferred to the Central district, with headquarters at Winnipeg, in January, 1913, and to the Manitoba district with headquarters at the same point in 1921 when operation of the Canadian Northern was

Railway Officers

Operating

L. W. Payne has been appointed assistant trainmaster on the East End of the St. Louis division of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Indianapolis, Ind., succeeding **S. S. Byers**, who recently resigned.

F. L. DuBosque, superintendent of floating equipment on the Eastern region of the Pennsylvania, with headquarters at New York, has been appointed superintendent of floating equipment for the New York Zone, with the same headquarters.

S. F. Ayler has been appointed trainmaster of freight terminals of the Kansas City Terminal division of the Missouri Pacific, with headquarters at Kansas City, Mo.

Effective October 1, the New Jersey division of the Pennsylvania (excluding the Atlantic and Camden Terminal divisions) and the Long Island are consolidated and the territory thus embraced will be known as the "New York Zone" under the jurisdiction of the vice-president at New York.

O. P. Powell, assistant general manager of the **Pullman Company** with headquarters at Chicago has been promoted to assistant vice-president—general manager and will be succeeded by **C. T. Ryan**, superintendent, with headquarters in Chicago who in turn will be succeeded by **B. H. Vroman**, district superintendent with headquarters at Denver, Colo.

Homer A. Empie, who has been appointed superintendent of the Champlain division of the Delaware & Hudson, with headquarters at Plattsburg, N. Y., was born at Breakabeen, N. Y., on May 1, 1877. He entered railway service on November 1, 1899, as telegraph operator and agent for the Delaware & Hudson, in which capacity he served at various points until January,

1912, when he was appointed division agent of the Champlain and Saratoga divisions, later serving in the same position on the Susquehanna division. In January, 1916, he was appointed assistant trainmaster on the Susquehanna division, and the following year he became chief clerk to the general manager. In August, 1917, he was promoted to the position of general fuel agent, in which capacity he served up until the time of his recent appointment as superintendent.

G. D. Hughey, who has been appointed superintendent of transportation on the Delaware & Hudson, with headquarters at Albany, N. Y., was born on December 7, 1884, at Oakmont, Pa. He was educated at the Pittsburgh High School and Rensselaer Polytechnic Institute, Troy, N. Y., and entered railway service in 1910, in the engineering department of the Bessemer & Lake Erie, at Greenville, Pa. He became inspector in the engineering department of the Delaware & Hudson in 1913 and from this time until August, 1917, he held various positions in that department. From the latter time until November, 1921, he was division engineer of the Champlain division, and from November, 1921, to May 1, 1925, he served as division engineer of the Susquehanna division of the same road. He was promoted to the position of superintendent of the Champlain division in May, 1925, and served in that capacity until his recent appointment as superintendent of transportation.

Albert Wilcox, who has been promoted to assistant to the general manager of the Western region of the Canadian National, with headquarters at Winnipeg, Man., has been in the service of Canadian Railways for 47 years. He was born on January 2, 1865, at Kincardine, Ont. After attending public schools at Owens Sound, Ont., he entered railway service in 1881 as an operator and freight and ticket clerk on the Toronto, Grey & Bruce (now



Albert Wilcox

taken over by the Canadian National. In 1924 he was promoted to general superintendent of transportation, with headquarters at Winnipeg. Mr. Wilcox's promotion to assistant to the general manager became effective on Oct. 1.

Traffic

M. C. Daly has been appointed general agent of the Groveton, Lufkin & Northern at Houston, Tex.

Harry J. Graham, general western freight agent of the Delaware, Lackawanna & Western, with headquarters at Chicago, has been promoted to western traffic manager, with headquarters at the same point.

C. W. Goldstein, district freight agent of the New Orleans Great Northern at St. Louis, Mo., has been appointed general western agent of the Over Seas Railways, Inc., with headquarters at the same point.

H. J. Freeman, freight claim agent for the Pennsylvania at Philadelphia, Pa., has been appointed freight claim

agent on the Long Island, with headquarters at the same point. **A. P. Hickcox**, assistant freight claim agent on the Pennsylvania, has been appointed to the same position on the Long Island, with headquarters as before at Philadelphia. **G. W. Rush**, assistant freight claim agent on the Pennsylvania at Philadelphia has been appointed assistant freight claim agent on the Long Island, with the same headquarters. **A. D. Forman** has been appointed district freight agent on the Long Island with headquarters at New York. These appointments are effective October 15.

Purchases and Stores

B. W. Roberts, assistant general purchasing agent for the Canadian Pacific, with headquarters at Montreal, Que., has been appointed general purchasing agent, with the same headquarters, succeeding **E. N. Bender**, retired.

Mechanical

H. K. Le Sure, master mechanic on the Eastern region of the Pennsylvania, with headquarters at New York, has been appointed master mechanic of the New York Zone, with the same headquarters. He will have jurisdiction over the Long Island and the electrified portion of the New York division.

Obituary

John A. Jackson, freight traffic manager on the Gulf, Mobile & Northern, with headquarters at Mobile, Ala., died at his home in that city, on October 7.

E. H. Barrett, assistant to the general manager of the Western lines of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Butte, Mont., died in that city on September 28.

John M. Simpson, assistant general passenger agent of the Michigan Central at Chicago, died at his home in that city on October 7. Mr. Simpson had been in the service of the Michigan Central for more than 43 years.

E. L. Wise, assistant superintendent on the Eastern division of the Louisville & Nashville with headquarters at Revanna, Ky., died on October 6, at the Good Samaritan Hospital, Lexington, Ky., after an illness of several weeks. Mr. Wise was in the service of the Louisville & Nashville for 40 years.

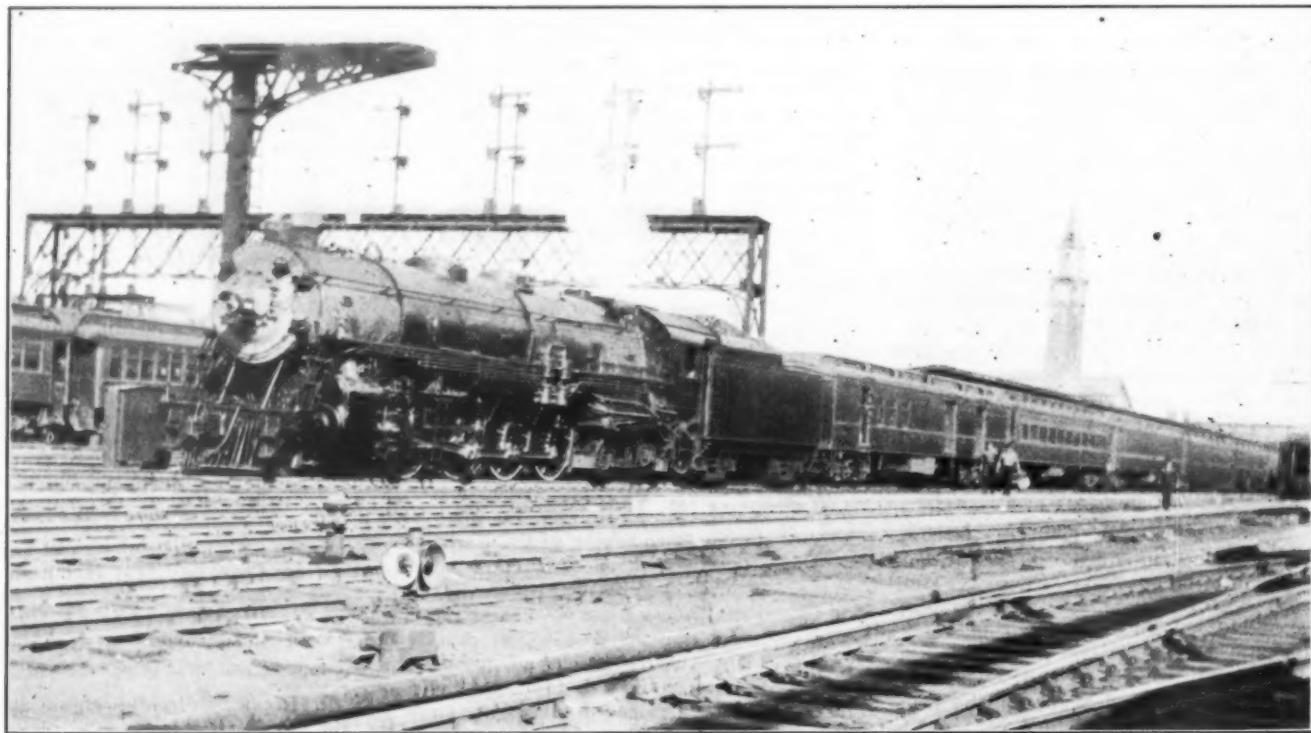
James R. Mulroy, former general storekeeper of the St. Louis-San Francisco and of the Pullman Company, died at his home in Chicago on October 7. Mr. Mulroy was born at Toronto, Ont., on March 17, 1864, and attended public school in Chicago. He entered railway service in April, 1878, in the stores department of the Chicago, Rock Island & Pacific at Chicago and after advancing through various positions in that department he was appointed general storekeeper of the Frisco, with headquarters at St. Louis, Mo., in November, 1906. In November, 1912, Mr. Mulroy was appointed general storekeeper of the Pullman Car & Manufacturing Corporation, with headquarters at Pullman, Ill., where he remained until March, 1922, when he was appointed general storekeeper of the Pullman Company, with headquarters at Chicago. Since October, 1924, he had been supervisor of the Pullman

Company in charge of linen, blankets, carpets and mattresses. Mr. Mulroy was president of the Railway Storekeeper's Association in 1912-1913.

THE DISPUTE BETWEEN THE GERMAN GOVERNMENT and the Federal Railroad Company over the question of increased freight and passenger rates has been terminated by a recent decision of the railroad arbitration board. This board decided that the railway is entitled to increase its rates to such an extent that the receipts of the company shall be increased by 250,000,000 marks. Of this, about 200,000,000 marks are to be contributed by the freight traffic and 50,000,000 marks by the passenger traffic. This means an increase in the freight rates averaging 11 per cent. The decision of the above mentioned board recommends increasing the freight rates on coal and foodstuffs to a smaller degree than on all other goods.

WORK OF ELECTRIFICATION of some of the existing steam railway lines in Spain proceeded actively during the year 1927, particularly in the sections operated by the Northern Railroad from Barcelona to Manresa and from Barcelona to San Juan de Las Abadesas, and on lines in the Bilbao district. American equipment is largely used in the electrification of these lines, although the electric locomotives, 35 in number, are being constructed in Bilbao, with Swiss motors. In the latter part of the year a contract for the electrification of the railroad from Palma to Soller on the Island of Majorca was let to a German firm.

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On the D. L. & W. at Hoboken Terminal, N. J.